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ABSTRACT

This guide provides a rationale and approach for translating Howard Gardner's theory of multiple intelligences into classroom practice. The introduction explains Gardner's theory, gives the definitions of the seven intelligences he identifies--verbal/linguistic, logical/mathematical, visual/spatial, body/kinesthetic, musical/rhythmic, interpersonal, intrapersonal--and defines specific capacities that are related to these intelligences. The seven chapters present model lessons that emphasize one of the intelligences as the primary mode of knowing and learning. Each of these lessons includes: (1) a lesson pallet that helps teachers select the appropriate tools for the intelligence being emphasized; (2) a brief overview of the processes of awakening, amplifying, teaching and transferring as they apply to the intelligence being emphasized in the lesson; (3) the lesson procedures; (4) suggestions for adapting the lesson to needs different from the proposed grade level; (5) assessment tips; (6) lesson pallets designed to help teachers reflect on how a past or future lesson could be restructured to incorporate the intelligence being emphasized in the lesson; and (7) a chart of ideas for lessons in a given intelligence area. The appendices contain helpful examples of lesson procedures and graphic organizers, a glossary, and 110 references. (AA)

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SEVEN WAYS OF TEACHING

The Artistry of Teaching with Multiple Intelligences

David Lazear

Foreword by Dee Dickinson

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SEVEN WAYS

THE ARTISTRY OF TEACHING WITH MULTIPLE INTELLIGENCES

David Lazear

OF TEACHING

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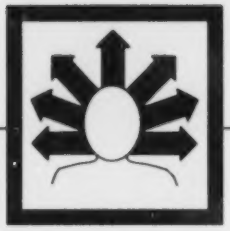

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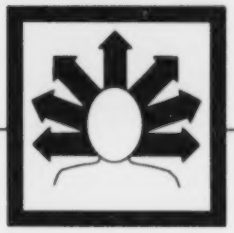


Foreword

In 1967, a Harvard study of how artistic knowledge develops and functions was begun. At this time Howard Gardner and David Perkins, currently the project's co-directors, were first-year graduate students. In 1981, Howard Gardner was awarded a MacArthur Prize to fund a shift to an educational emphasis in the work of Project Zero. In the APA Monitor article about the award, the author noted that "early in his career, Gardner had been a committed Piagetian, but as he pursued his own studies, Gardner came to view Piaget's theories as too narrow a notion of how the human mind works." In 1980, *The Mind's New Science* was conceived and supported by the Sloan Foundation.

Gardner was already formulating his Theory of Multiple Intelligences based on his belief that there is not just one form of cognition which cuts across all human thinking. His theory proposed that there are multiple intelligences with autonomous intelligence capacities. A book was forming in his mind in the late 1970's, and through a large grant from the Bernard Van Leer Foundation, he began to write *Frames of Mind*, which he described as a "contemporary, empirically-based effort to answer long-standing philosophical questions about Psychology's theoretical underpinnings!"

Frames of Mind was published in 1983. In 1984, Howard Gardner presented his new theory to a large number of educators who attended "The Coming Education Explosion" conference at the Tarrytown Conference Center in New York. The conference program was packed with leading-edge educational theorists and practitioners—all of whom were finding successful, innovative ways to foster learning and human development. As soon as Gardner spoke, it became clear that his theory provided a framework for all of the other presentations. The implications for education at all levels and in every setting were evident.

That conference touched off a wave of educational innovation throughout the country, and was the beginning of a series of seven international conferences that New Horizons for Learning produced with the Multiple Intelligences as a framework. Each of those conferences presented information through many kinds of intelligences in a specially created environment filled with music, colorful mind-maps created as the presenters spoke, exercises and other physical activities at every break, and dancing into the night.

Attendees reported that they were able to absorb more information than they ever thought possible, and, moreover, during the conference, rather than being tired, they became energized. After each of these events, teachers and school administrators could hardly wait to go back to their classrooms and schools to apply what they had learned. And from many different parts of the country letters poured in with enthusiastic reports about students who were learning in new ways—about new curriculum being designed—about classrooms and schools taking on a new look.

In 1984 eight Indianapolis public school teachers submitted a proposal to the Indiana Department of Education for a grant to plan a curriculum for the creatively gifted and talented. During the next school year the teachers met on a voluntary basis to complete their project, and in 1985 they approached the superintendent to ask for their own school. That fall they met with Howard Gardner in order to share the results of their work based on his Theory of Multiple Intelligences and to discuss their plans to develop their own school built around the theory. The "Indianapolis Eight" set up a steering committee of experts to advise them, and by 1986 they submitted their proposal to begin the Key School, which opened its doors the next year.

As one of the first schools to be based on the Multiple Intelligences Theory, the Key School, under the leadership of Pat Bolanos, has pioneered the classroom application of Gardner's work, including new kinds of teaching and learning, evaluation, and expanded possibilities for human development.

Also in 1987, Thomas Armstrong, a psychologist and learning specialist, wrote *In Their Own Way*, an important parenting guide based on Gardner's theory. Armstrong's book helps parents and teachers to understand the complex differences among children and how to create a stimulating and nurturing environment to foster the development of all their intelligences. It has done much to further the understanding and appreciation of an expanded view of intelligence.

During the last few years, a large number of new Multiple Intelligence programs have been springing up not only in the United States but throughout the world. Following are but a few examples:

Bruce Campbell, a third/fourth grade teacher in the Marysville, Washington School district, has set up Multiple Intelligence stations in his classroom so his students learn everything in seven different ways. As a result, his students not only have improved academically, but also exhibit improved behavior, have developed diverse learning and thinking skills and the ability to work in both cooperative and self-directed ways. His work has been so successful that it has gained national attention.

Linda MacRae Campbell has trained thousands of teachers in Multiple Intelligence theory in school districts throughout this country and abroad. She has created and directs a new teacher certification program at Antioch University, Seattle with this theory at the heart of the program, which has been recognized as one of the most innovative in the country.

In inner-city Chicago, the Guggenheim School has been implementing accelerated learning techniques and Multiple Intelligence theory for the last six years. A visionary principal and dedicated teachers trained in multisensory teaching strategies moved the school from seventeenth place out of seventeen schools in the district to first place in one year.

The New City School in Saint Louis, Missouri has studied Multiple Intelligence theory for two years and is now in its first year of implementation with exciting results in every classroom.

Seven Oaks Elementary School in Lacey, Washington has hired a specialist in each of the seven intelligences as the school embarks on its first year of applying Multiple Intelligence theory to teaching and learning.

The Renaissance Project, co-directed by Dr. David Thornburg (director of the Thornburg Center for Professional Development) and Sue Teele (director of Education Extension at UC Riverside), is a research project that links instructional strategies and technology to Multiple Intelligence theory. The project is focused on developing teaching methods and authentic assessment measures to help students develop their capabilities in all the intelligences.

In LaGrange, Illinois, Pat Gullett, who has taught high school art for twenty years, changed her whole approach to teaching as a result of her introduction to Multiple Intelligence theory. On completing her Masters Program in Interdisciplinary Arts Education at Columbia College she created an exhibit of seven mixed-media art pieces based on Multiple Intelligence theory. The exhibit covers a thirty-foot wall.

And New Horizons for Learning has continued to disseminate information on such successful practices of Multiple Intelligence

theory and practice through its newsletter, seminars, and conferences offered throughout the United States, the Soviet Union, Europe, and Central and South America.

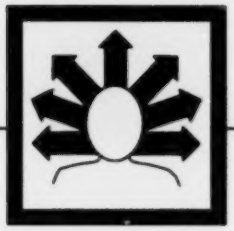
It is into this context of pioneering efforts in education that David Lazear offers his comprehensive book of teaching/learning strategies to further expand the practical application of the Theory of Multiple Intelligences. Over the years, growing numbers of educators have become eager to explore the possibilities of helping their students to expand their capacities more fully by implementing Multiple Intelligence theory in their schools. *Seven Ways of Teaching* will offer them useful, creative, and stimulating strategies to vitalize their classrooms and help their students learn in exciting new ways.

The format of this book is also appropriate to Multiple Intelligence theory, with attractive and informative illustrations, charts, and diagrams and many activities to apply in the teaching of all subjects. It is noteworthy that in each section Lazear has made sure to include suggestions on the teaching of transfer, which does not automatically occur in most subjects. Making sure that students can apply what they have learned in contexts outside of the classroom is of major importance in making learning relevant and of long-lasting value.

Lazear has also included specific examples of authentic assessment that go far beyond what standardized tests are capable of revealing. Portfolios of student work, student projects, and journals are not only useful measures of student progress, but offer students insights about their own work. Furthermore, they provide rich opportunities for students to engage in reflective thinking that is often neglected by teachers in their haste to cover more subject-matter.

Every teacher will find numerous examples of how to motivate students, present material in a variety of ways, and offer opportunities for practical and creative application of what has been learned. *Seven Ways of Teaching* is a fine handbook for teaching and learning in today's world.

Dee Dickinson
President
New Horizons for Learning



Prologue

My interest in the theory of multiple intelligences and its application in the classroom comes from a number of experiences, one of which is having mentored two daughters through grade school and junior high. Two events stand out in my mind as I begin this companion volume to my first book on this subject, *Seven Ways of Knowing: Teaching for Multiple Intelligences.*

The first experience was an encounter with my youngest daughter's 5th-grade teacher. Naomi was having difficulties in a number of subjects, mostly those in which understanding the relationships of ideas, events, and people were important (history, social studies, literature, and the like). In a parent-teacher meeting the teacher explained that Naomi simply didn't have the capacity for grasping complex relationships and intricacy of detail and that she probably needed to be placed in a lower-level class.

Almost in the same breath the teacher pointed to a piece of Naomi's artwork on the wall. It was near Valentine's Day and she had created a large heart poster. It looked like a simple valentine with lace decorations. But as I got closer I discovered that she had created a multi-layered, three-dimensional heart from construction paper that had hearts within hearts within hearts all forming an intricate maze of pathways to a central heart chamber where, in raised, multi-colored letters, made from hundreds of miniature hearts (much like the flower petals on floats in the Rose Parade), she had created the message "Be mine, Valentine!" I was stunned, especially in light of the fact that I had just been told that my daughter did not have the capacity for dealing with complex relationships and intricate detail!

Almost immediately I said to the teacher, "If she could learn her history, social studies, and literature this way (pointing to the valentine on the wall), she'd get it!" To which the teacher replied, "Mr. Lazear, art is art and history is history. History is not art. History involves learning facts, dates, people, and events and how they are all related. Your daughter isn't learning these things."

While I didn't know then what I know now about multiple intelligences, I knew this teacher was wrong about the separateness of the disciplines. I, perhaps instinctively, knew that somehow Naomi's highly developed visual/spatial capacities could be tapped to help her with her studies. It was many years later that I discovered how.

The second experience involved my eldest daughter, Esther. Esther is very much a body/kinesthetic knower and learner. In fact, over the years many teachers have called me with what was supposed to be alarming news, that she was "hyperactive." In any event, when she was in junior high school, she came home from school one day with a list of 20 vocabulary words to learn for a test the next day. I sent her to her room to memorize the words and to come back to me when she had learned them.

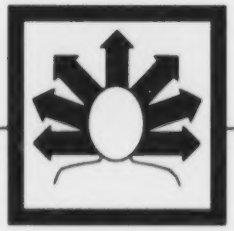
After a period of time she came to me with "OK Daddy, I'm ready. Test me." I proceeded to do just that. She got less than 50% of the words right. So I said to her, "Esther, you're an intelligent girl. You're just not thinking. Back to your room and write each word and definition five times, and this time pay attention to what you are doing!" Reluctantly she wandered off to her room. After a reasonable amount of time, she brought her work to me and I was sure she would have them this time; after all, *I would have if it had been me*! I tested her again, and to my dismay, she had improved very little. Finally, totally exasperated, she said to me, "Daddy, I can't learn this way. I've got to be moving around. I've got to learn with my body!"

Well, for the next 20-30 minutes very strange and wonderful things transpired in my study. We proceeded to "em-body" the meaning of the words; that is, learn them with our bodies. I would say the word and its definition and she would create body movements and physical gestures that somehow communicated the meaning of the word to her. We were crawling on the floor, leaping in the air, jumping off furniture, doing all manner of strange and bizarre things. But at the end of this time, to my amazement, she had the list down perfectly *with her body*! I would say the word, the word would remind her of the body movement, which she would then perform, and, the body movement helped trigger the verbal definition.

This book is dedicated to Esther and Naomi, and to all children in our schools who have "other" ways of knowing and learning than our current systems of education take into account. It is my hope that educators will use this book, and *Seven Ways of Knowing*, to

begin a very important educational experiment in teaching FOR, WITH, and ABOUT multiple intelligences. I have called this book *Seven Ways of Teaching* in order to suggest that our instructional methods must undergo a revolution if we are to reach all students sitting in our classrooms, who have at least seven ways of knowing and probably many more! I often wonder how many kids are in "special ed" classes simply because we have not known how to approach their knowing and learning through a different set of doorways than the verbal/linguistic and logical/mathematical, which dominate all systems of education in the Western world today. In a time when programs for the "gifted" flourish in many schools, I find myself an advocate for the "giftedness" of every child, if only we as teachers can find the keys to unlock their full potential.

David Lazear
Chicago, 1991



Introduction

The Artistry of Teaching FOR, WITH, and ABOUT Multiple Intelligences

What is intelligence? How can we measure it? And once it's been measured, what should we do with it?

For many centuries humankind has been trying to understand the workings of its own mind—sometimes through magic, sometimes through psychology, sometimes through sociology and anthropology, sometimes through religion, and sometimes through medicine. In the last 30-50 years, researchers from every walk of life, and from virtually every profession and academic discipline have begun a new set of explorations of a new frontier—the human mind and how it works. And they have been coming up with some astonishing discoveries, many of which have called into question all previous understandings about humanity and its potentials:

- **RIGHT BRAIN/LEFT BRAIN.** In 1981 Dr. Roger Sperry received a Nobel Peace Prize for his research into the different ways the left and right hemispheres of the brain process information. In the left hemisphere processing is more linear and sequential, while the right brain's processing tends to be more simultaneous and creative. These two modalities are brought together in a new area of research known as "whole brain" processing.
- **TRIUNE BRAIN.** Dr. Paul MacLean, Chief of the Laboratory of Brain Evolution and Behavior at the National Institute of Mental Health in Washington, D.C. has done an important research study that suggests that within our one brain there are three separate brains that come from our earlier development as a species. As we developed, and the need for more involved levels of thinking and mental processes were required, the brain

simply grew new layers, each more complex and more intricate than its predecessor. While all three brains are still there, they operate as a unified whole giving us the wisdom and potentials of our evolutionary past.

- **INTELLIGENCE CAN BE ENHANCED AND AMPLIFIED.** In the past intelligence was viewed as a fixed, static entity. It was something you were born with and were stuck with for life. However, contemporary brain-mind researchers, such as Dr. Jean Houston, Dr. Robert Masters, Dr. Willis Harman, and Dr. Luis Machado, are suggesting that possibly the only limits to our intelligence are self-made and are related to our beliefs about what is possible. What is more, Israeli psychologist and researcher, Dr. Reuven Feuerstein, along with a number of others, suggest that at any age, and at almost any ability level, one's mental functioning can be improved. We can, apparently, all learn to be more intelligent by consciously activating perception and knowing on more levels than we usually use!
- **THE BRAIN IS A LIKE A HOLOGRAM.** Dr. Karl Pribram of Stanford University has proposed a fascinating new theory of the brain as a hologram. In a hologram, all of the basic information of the whole is stored within each part of the hologram, so that if it was in some way shattered, each piece would contain and be capable of reproducing all of the information of the former whole. Pribram suggests that memory storage may work like this in the brain. Think for a moment about times when a very small fragment of a memory is able to bring back a full-sensory experience of something that may have happened in your childhood.
- **INTELLIGENCE IS A MULTIPLE REALITY.** Dr. Howard Gardner and his team of Harvard researchers involved in *Project Zero* have postulated that there are many forms of intelligence, many ways by which we know, understand, and learn about our world, not just one. And most of these ways of knowing go beyond those that dominate Western culture and education, and they definitely go beyond what current "I.Q. tests" can measure. He proposed a schema of seven intelligences and suggests that there are probably many others that we have not yet been able to test!

It is the research of Howard Gardner on which this book, as well as *Seven Ways of Knowing*, is primarily based. Let me briefly summarize the "seven ways of knowing" Gardner identified:

VERBAL/LINGUISTIC INTELLIGENCE is responsible for the production of language and all the complex possibilities that follow, including poetry, humor, story-telling, grammar, metaphors, similes, abstract reasoning, symbolic thinking, conceptual patterning, reading, and writing. This intelligence can be seen in such people as poets, playwrights, story-tellers, novelists, public speakers, and comedians.

LOGICAL/MATHEMATICAL INTELLIGENCE is most often associated with what we call "scientific thinking" or inductive reasoning, although deductive thought processes are also involved. This intelligence involves the capacity to recognize patterns, work with abstract symbols (such as numbers and geometric shapes), and discern relationships and/or see connections between separate and distinct pieces of information. This intelligence can be seen in such people as scientists, computer programmers, accountants, lawyers, bankers, and of course, mathematicians.

Logical/mathematical and verbal/linguistic intelligence form the basis for most systems of Western education, as well as for all forms of currently existing standardized testing programs.

VISUAL/SPATIAL INTELLIGENCE deals with such things as the visual arts (including painting, drawing, and sculpture); navigation, map-making, and architecture (which involve the use of space and knowing how to get around in it); and games such as chess (which require the ability to visualize objects from different perspectives and angles). The key sensory base of this intelligence is the sense of sight, but also the ability to form mental images and pictures in the mind. This intelligence can be seen in such people as architects, graphic design artists, cartographers, industrial design draftspersons, and of course, producers of the visual arts (painters and sculpters).

BODY/KINESTHETIC INTELLIGENCE is the ability to use the body to express emotion (as in dance and body language), to play a game (as in sports), and to create a new product (as in invention). "Learning by doing" has long been recognized as an important part of education. Our bodies know things our minds don't and can't know in any other way. For example, it is our bodies that know how to ride a bike, roller skate, type, and parallel park a car. This intelligence can been seen in such people as actors, athletes, mimes (like Marcel Marceau), professional dancers, and inventors.

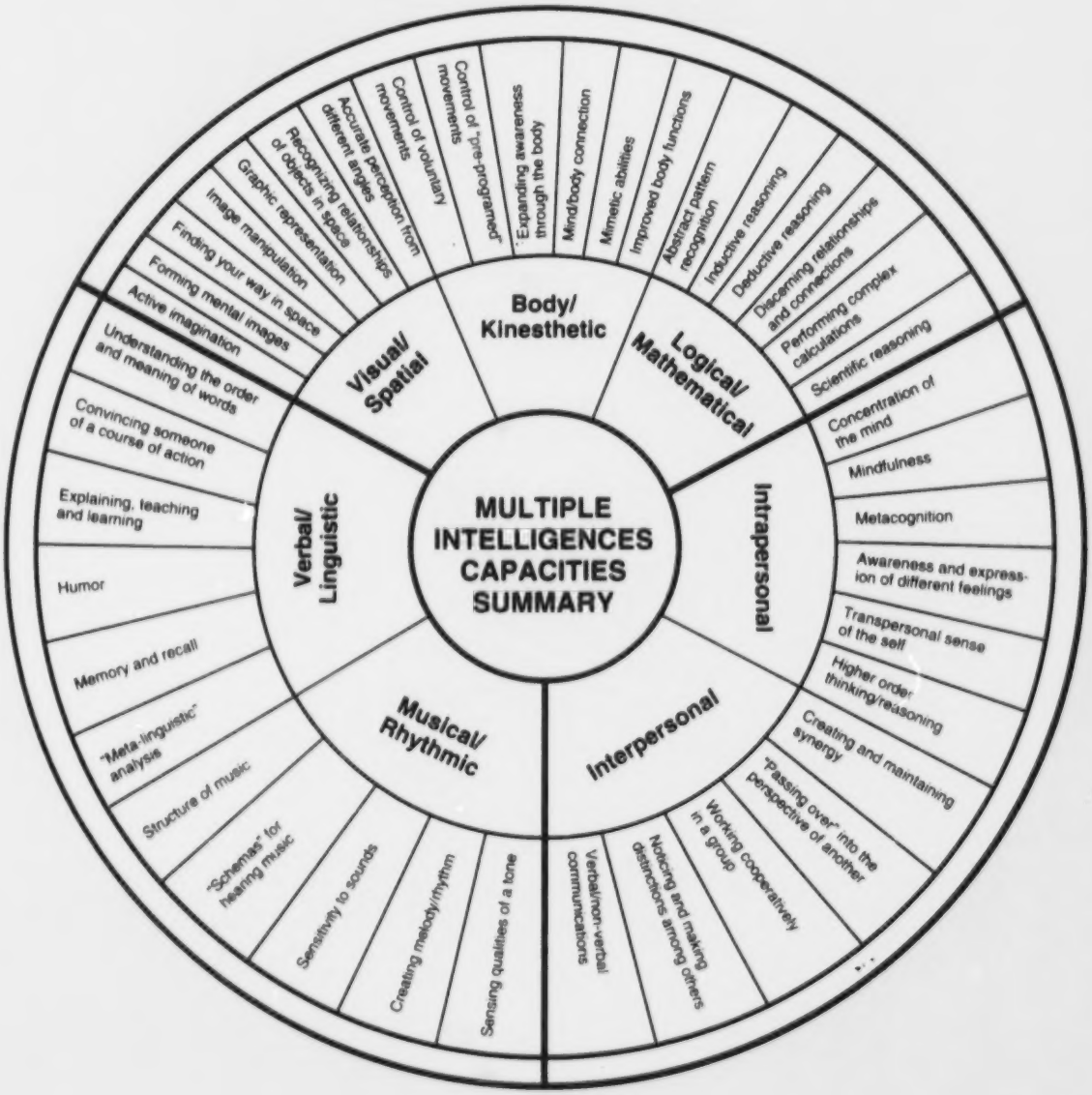
MUSICAL/RHYTHMIC INTELLIGENCE includes such capacities as the recognition and use of rhythmic and tonal patterns, and sensitivity to sounds from the environment, the human voice, and musical instruments. Many of us learned the alphabet through this intelligence and the "A-B-C song." Of all forms of intelligence, the "consciousness altering" effect of music and rhythm on the brain is probably the greatest. This intelligence can be seen in advertising people (those who write catchy jingles to sell a product), professional performance musicians, rock groups, dance bands, composers, and, obviously, music teachers.

INTERPERSONAL INTELLIGENCE involves the ability to work cooperatively with others in a group as well as the ability to communicate, verbally and non-verbally, with other people. It builds on the capacity to notice distinctions among others; for example, contrasts in moods, temperament, motivations, and intentions. In the more advanced forms of this intelligence, one can literally "pass over" into another's perspective and "read" their intentions and desires. One can have genuine empathy for another's feelings, fears, anticipations, and beliefs. This form of intelligence is usually highly developed in such people as counselors, teachers, therapists, politicians, and religious leaders.

INTRAPERSONAL INTELLIGENCE involves knowledge of the internal aspects of the self, such as knowledge of feelings, the range of emotional responses, thinking processes, self-reflection, and a sense of or intuition about spiritual realities. Intrapersonal intelligence allows us to be conscious of our consciousness; that is, to step back from ourselves and watch ourselves as an outside observer. It involves our capacity to experience wholeness and unity, to discern patterns of connection with the larger order of things, to perceive higher states of consciousness, to experience the lure of the future, and to dream of and actualize the possible. This intelligence can be seen in such people as philosophers, psychiatrists, spiritual counselors and gurus, and cognitive pattern researchers.

On the opposite page is a model I created for *Seven Ways of Knowing* to show some the specific capacities (what Gardner sometimes calls "sub-intelligences") that are related to the seven ways of knowing.

Multiple Intelligences Capacities Wheel



The good news is that each of us have all of these intelligences, but not all of them are developed equally and thus we do not know how to use them effectively. In fact, it is usually the case that one or two intelligences are stronger and more fully developed than the others. But, this need not be a permanent condition. *We have within ourselves the capacity to activate all of our intelligences!*

What are possibilities of teaching FOR, WITH, and ABOUT multiple intelligences in the classroom?

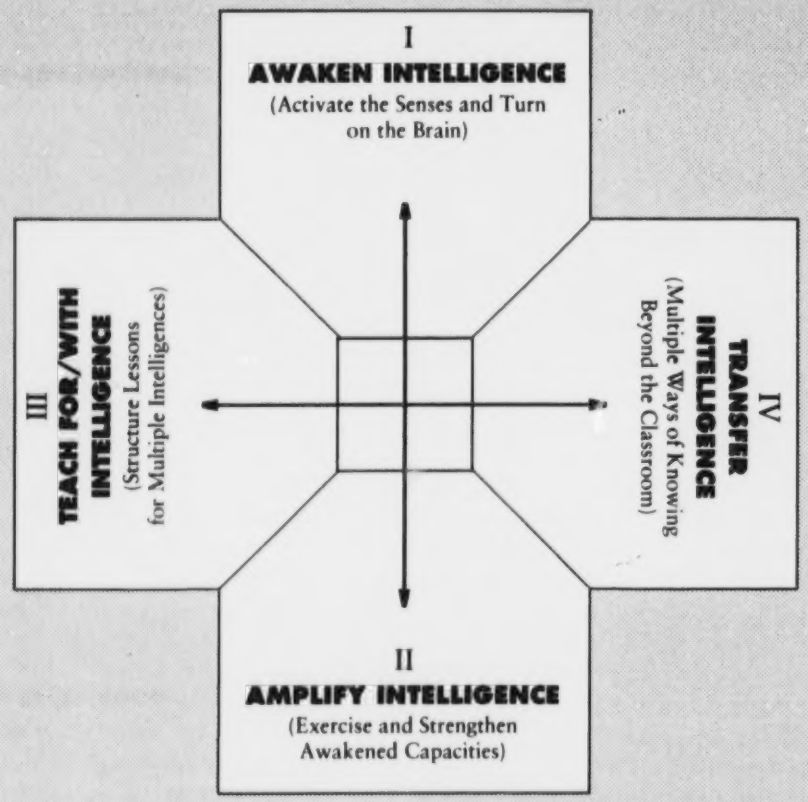
There are at least three different types of lessons that are needed:

1. **Intelligence as a subject unto itself** ***(teaching FOR multiple intelligences).*** Each of the intelligences can be taught as a subject in its own right: music skills, language, art as a formal discipline, mathematical calculation and reasoning, skillful body movement (as in physical education, dance, and drama), and various "social skills" necessary for effective functioning in our society. Teaching these subjects requires a grasp of the developmental stages of each intelligence as well as an understanding of the accumulated cultural wisdom on the subject, the formal knowledge base, and the practical methods, skills, and techniques of the intelligence.
2. **Intelligence as a means to acquire knowledge** ***(teaching WITH multiple intelligences).*** Each of the intelligences can be used as a means to gain knowledge in areas beyond itself: using body movement to learn vocabulary words, music to teach math concepts, art (drawing, painting, and sculpture) to bring to life different periods of history and different cultures, debate to explore various perspectives on current events, and the skill of comparing and contrasting to analyze characters in a Shakespearean play.
3. **"Meta-intelligence"—intelligence investigating itself** ***(teaching ABOUT multiple intelligences).*** Lessons that deal with meta-intelligence processes are concerned with teaching students about their own multiple intelligences—how to access them, how to strengthen them, and how to actively use them in learning and in everyday life.

OK, I buy the "Seven Ways of Knowing!" What does it take to teach in this way? What 's involved in lessons that take into account the reality of multiple intelligences in the classroom?

Generally speaking, there are four stages necessary to teach WITH multiple intelligences. The developmental sequence goes something like this:

What Does It Take To Teach Intelligence?



Stage I
AWAKEN INTELLIGENCE

Each of the intelligences is related to the five senses. In general, a particular intelligence can be activated or triggered through exercises and activities which use the following sensory bases: sight, sound, taste, touch, smell, speech, and communication with others, as well as "inner senses" such as intuition, metacognition, and spiritual insight.

Stage II
AMPLIFY INTELLIGENCE

This involves practices for expanding, deepening, and nurturing an awakened or activated intelligence. As with any skill, our intelligence skills can not only be awakened, but can also be improved and strengthened if we use them on a regular basis. And, like any skill, they will also go back to sleep if not used.

Stage III
TEACH FOR/WITH INTELLIGENCE

This stage involves learning how to use, trust, and interpret a given intelligence through knowing, learning, and understanding tasks. In this book, teaching WITH intelligence is approached from the perspective of classroom lessons that emphasize and use different intelligences in the teaching/learning process.

Stage IV
TRANSFER INTELLIGENCE

Here we are concerned with the integration of an intelligence into daily living, and its appropriate application to solving problems and meeting the challenges we face in the so-called "real world." The goal of this stage is for the intelligence to become a regular part of our cognitive, affective, and sensory lives.

Stage I. We must be aware that we possess multiple ways of knowing and learning and that we must learn various techniques and methodologies for "triggering" an intelligence within the brain/mind/body system.

Stage II. We must learn how particular intelligences (ways of knowing) work; that is, what the various capacities and/or skills are, how to access them, and how to use and understand different intelligence modalities. This involves both practice in strengthening intelligence capacities as well as learning how to interpret and work with the different kinds of information we receive from each intelligence. We must learn to understand the unique "language" of each intelligence; that is, how each expresses itself. For example, the "language" of body/kinesthetic intelligence is physical movement—NOT words, sentences, writing, and speech.

Stage III. We must learn how to teach content-based lessons that apply different ways of knowing to the specific content of a given lesson. My first presupposition is that **we can teach ALL students to be more intelligent** in more ways, and on more levels than they (or we) ever dreamed. My second presupposition is that **ANYTHING can be taught and learned through all of the intelligences.** This means that we as teachers must learn how to use the intelligences in the teaching/learning process. About 95% of the material we have to teach comes pre-packaged in a verbal/linguistic or logical/mathematical form. However, in planning lessons that teach this material, we need not be bound by this packaging. My goal in writing this book is to help you learn to design and implement lessons that emphasize all seven ways of knowing.

Stage IV. We must teach our students how to use all of the intelligences to improve their effectiveness in dealing with the issues, challenges, and problems we face in the task of daily living. This is primarily a matter of approaching these matters on multiple levels, with a variety of problem-solving methods that use different intelligences.

The model on page *xix* is one I used as the basic structure for the chapters in *Seven Ways of Knowing*. In this book, I use it to demonstrate the fundamental dynamics that I believe need to be present in lessons that are designed to emphasize the different ways of knowing and learning when teaching content-based information.

Let's get practical now. Enough theory! How do I plan lessons that take into account multiple intelligences? What is the "nitty-gritty" of this?

I'm glad you asked, for this is what the rest of the book is about! Each of the following chapters presents a model lesson that empha-

sizes one of the intelligences as the primary mode of knowing and learning. As a preface to these lessons I must mention that in the normal person the intelligences operate in concert with each other, generally in very well-orchestrated ways, although certain of the intelligences do tend to be stronger or more developed than others. Therefore in each of the lessons you will notice all of the intelligences "get into the act," so to speak, even though the lessons are designed to focus on and use one intelligence in particular. In my own teaching I generally try to involve at least three ways of knowing *beyond* the verbal/linguistic and logical/mathematical. I believe this is a good rule of thumb for classroom lessons as well. Remember, the more intelligences you can incorporate into a lesson the deeper and more thorough the learning will be.

On page *xxiii* is a **multiple intelligences toolbox.** It contains practical techniques, methods, tools, and media for accessing the seven intelligences. They must be used in conjunction with other parts of the lesson and adapted for dealing with content-based information, but these tools can help you move quickly into various ways of knowing in a lesson. In each lesson I have selected several tools from the toolbox and integrated them into the lesson. The tools selected for a given lesson are checked on the lesson palettes.

The elements of the remaining chapters of this book are as follows:

1. **Lesson Palette.** The use of the palette as a metaphor for lesson planning is a technique I have found very helpful to remind myself that, as teachers, we are artists who are creating curriculum eventfulness for students. The palette can help you select tools that are appropriate for your objectives as well as help you see how to integrate the different intelligence tools into the lesson. The palette for each lesson lists the ten tools (from the toolbox) for the intelligence being emphasized. On each palette I have checked the specific tools used in the lesson as well as the other intelligences that are involved. (See p. 114 for a blank palette you can use on your own).

2. **The Lesson at a Glance.** This two-page model is a brief overview of the processes of *awakening, amplifying, teaching,* and *transferring* as they apply to the intelligence being emphasized in the lesson.

3. **Lesson Procedures.** The lessons are intended to be models from which you can design your own lessons. They are step-by-step procedures written from the perspective of the teacher; what you do and what you say to get students involved in using their seven intelligences in the classroom. In the left margin is the "metacognitive processing" of the lesson and is, in my opinion, the most important part of the book. The discussion explains what is going on in the lesson from the perspective of the research on multiple intelligences.

4. **"Spiral" Adaptation of the Lesson.** Each lesson focuses on one grade level (elementary, middle school, or secondary). I have therefore included this section in order to provide some suggestions for other levels. This adaptation relies on the research of Jerome Brunner on "spiraling" the curriculum. He said that we can teach anything to anyone, at any age, if we as teachers take the time to get inside their world view and speak the language that is meaningful to them in that world, at that age.

5. **Assessment Tips.** These are some assessment ideas related to the completed lesson. These ideas will make extensive use of student portfolios and reflection logs (see p. *xxvi* and 115-118 for models).

6. **"Look to the Past..." "Look to the Future..."** These are lesson palettes designed to help the teacher reflect on how a past or future lesson could be restructured to incorporate the intelligence being emphasized in the lesson.

7. **Lesson Planning Ideas.** This is a chart of ideas for lessons in a given intelligence area. I have tried to address all major subject areas we teach in our schools, such as history, mathematics, language arts, social studies, science, health, geography, computer science, physical education, industrial arts, home economics, and the fine arts. The ideas in the chart are "lesson seedlings" which you may want to plant, water, put in the sunlight, and see if they grow. Incidentally, I'd love to hear about any that do grow!

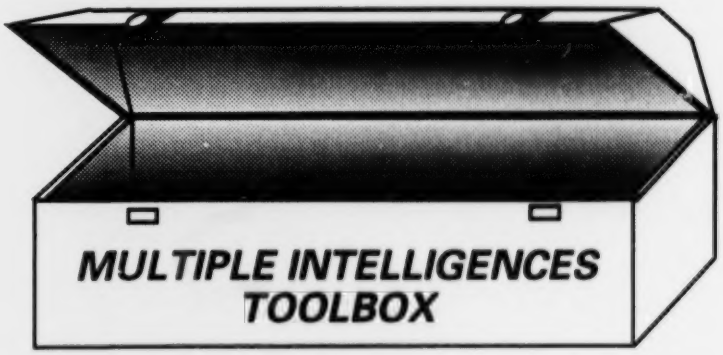
I hope you have fun with this book and that it sparks many new ideas for you and your students. I believe that the next stages of the research on multiple intelligences will happen in the laboratory of the normal school classroom. It will be based on what you discover as you conduct various experiments with "Seven Ways of Teaching," helping kids activate and use their "Seven Ways of Knowing."

VERBAL/LINGUISTIC
- Reading
- Vocabulary
- Formal Speech
- Journal/Diary Keeping
- Creative Writing
- Poetry
- Verbal Debate
- Impromptu Speaking
- Humor/Jokes
- Storytelling

LOGICAL/MATHEMATICAL
- Abstract Symbols/Formulas
- Outlining
- Graphic Organizers
- Number Sequences
- Calculation
- Deciphering Codes
- Forcing Relationships
- Syllogisms
- Problem Solving
- Pattern Games

VISUAL/SPATIAL
- Guided Imagery
- Active Imagination
- Color Schemes
- Patterns/Designs
- Painting
- Drawing
- Mind-Mapping
- Pretending
- Sculpture
- Pictures

BODY/KINESTHETIC
- Folk/Creative Dance
- Role Playing
- Physical Gestures
- Drama
- Martial Arts
- Body Language
- Physical Exercise
- Mime
- Inventing
- Sports Games



MUSICAL/RHYTHMIC
- Rhythmic Patterns
- Vocal Sounds/Tones
- Music Composition/Creation
- Percussion Vibrations
- Humming
- Environmental Sounds
- Instrumental Sounds
- Singing
- Tonal Patterns
- Music Performance

INTERPERSONAL
- Giving Feedback
- Intuiting Others' Feelings
- Cooperative Learning Strategies
- Person-to-Person Communication
- Empathy Practices
- Division of Labor
- Collaboration Skills
- Receiving Feedback
- Sensing Others' Motives
- Group Projects

INTRAPERSONAL
- Silent Reflection Methods
- Metacognition Techniques
- Thinking Strategies
- Emotional Processing
- "Know Thyself" Procedures
- Mindfulness Practices
- Focusing/Concentration Skills
- Higher-Order Reasoning
- Complex Guided Imagery
- "Centering" Practices

Logical/Mathematical Intelligence

Often called "scientific thinking," this intelligence deals with inductive and deductive thinking/reasoning, numbers and the recognition of abstract patterns.

Verbal/Linguistic Intelligence

This intelligence, which is related to words and language—written and spoken—dominates most Western educational systems.

Visual/Spatial Intelligence

This intelligence, which relies on the sense of sight and being able to visualize an object, includes the ability to create internal mental images/pictures.

Intrapersonal Intelligence

This intelligence relates to inner states of being, self-reflection, metacognition (i.e. thinking about thinking) and awareness of spritual realities.

7 WAYS OF KNOWING

MULTIPLE INTELLIGENCES

Body/Kinesthetic Intelligence

This intelligence is related to physical movement and the knowings/wisdom of the body, including the brain's motor cortex, which controls bodily motion.

Interpersonal Intelligence

This intelligence operates primarily through person-to-person relationships and communication.

Musical/Rhythmic Intelligence

This intelligence is based on the recognition of tonal patterns, including various environmental sounds, and on a sensitivity to rhythm and beats.

Views of the Brain

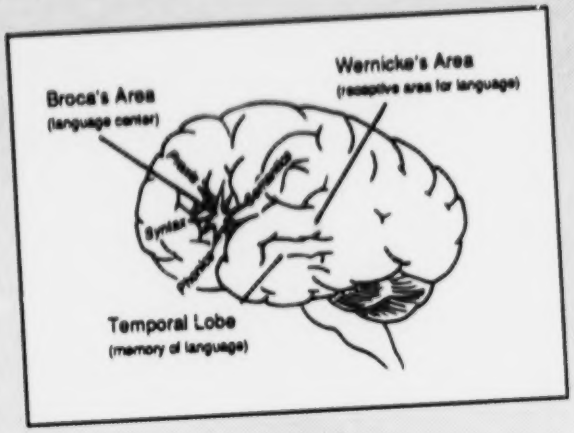


Figure 1

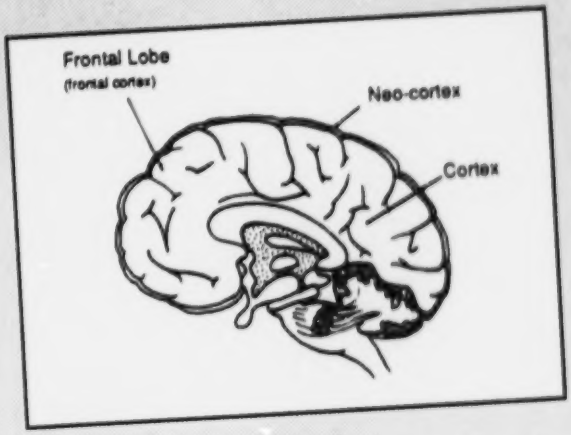


Figure 2

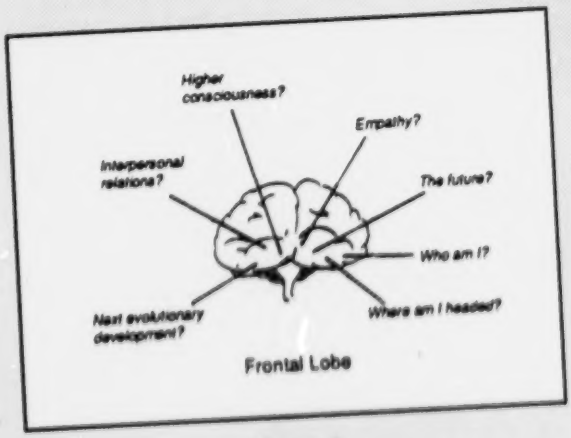


Figure 3

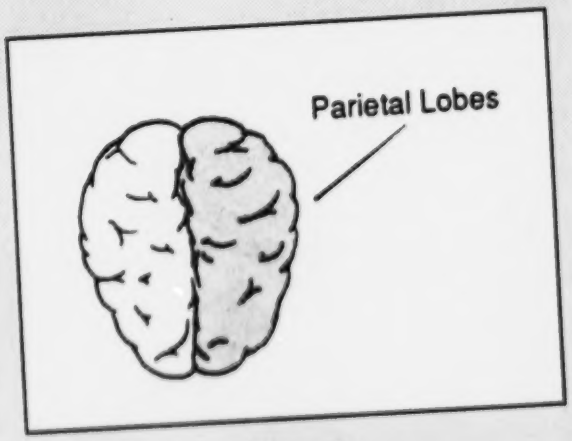
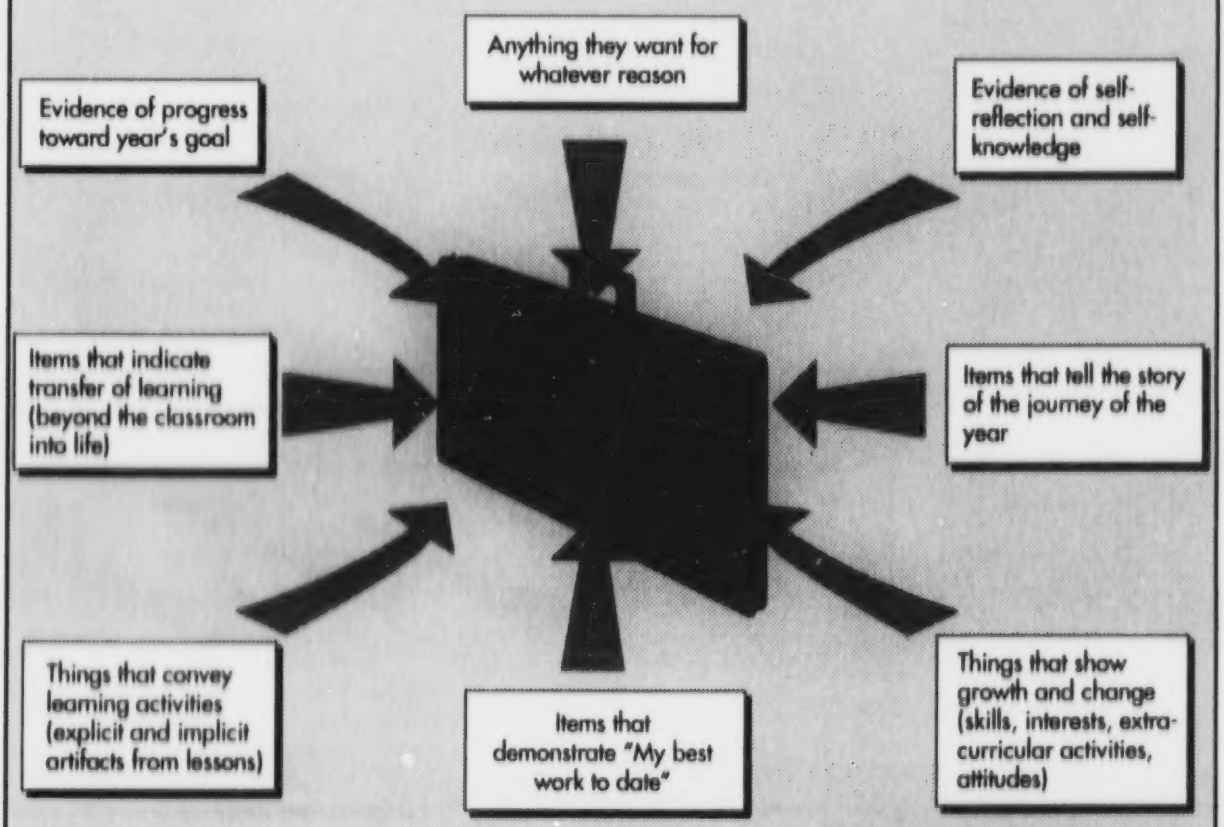


Figure 4

A Model for Creating Student Portfolios

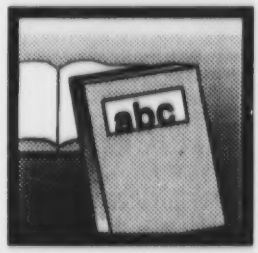
Q. What should be included to really show what they know?

A. Ask the students. Let them help decide.


Anything they want for whatever reason
Evidence of progress toward year's goal
Evidence of self-reflection and self-knowledge
Items that indicate transfer of learning (beyond the classroom into life)
Items that tell the story of the journey of the year
Things that convey learning activities (explicit and implicit artifacts from lessons)
Items that demonstrate "My best work to date"
Things that show growth and change (skills, interests, extra-curricular activities, attitudes)

"Exploring Natural Objects"

TEACHING WITH



VERBAL/LINGUISTIC INTELLIGENCE

CHAPTER 1

A General Science Lesson:
Elementary School Level

Lesson Palette: *Verbal/Linguistic* Emphasis

VERBAL LINGUISTIC STRATEGIES

- ☑ Reading
- ☐ Vocabulary
- ☐ Formal Speech
- ☐ Journal/Diary Keeping
- ☑ Creative Writing
- ☐ Poetry
- ☐ Verbal Defense
- ☑ Impromptu Speaking
- ☑ Humor/Jokes
- ☐ Storytelling

SUBJECT AREA: General Science

INTELLIGENCE EMPHASIS: Verbal/Linguistic

LESSON OBJECTIVE: To explore and understand the attributes of various objects from nature and how they differ from each other.

SUPPLIES/MATERIALS:

- one natural object (living or non-living) per team in a shoe box
- one large file folder per team
- two 6 Ss worksheets (see p. 122)

ROOM ARRANGEMENT: Desks in clusters of three with plenty of space between teams

THE LESSON . . .

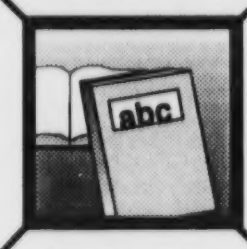
STAGE I
AWAKEN

Trigger verbal/linguistic intelligence by using the spoken word, reading someone else's ideas or poetry, writing one's own ideas or poetry, telling stories, listening to stories, and using all kinds of humor including riddles, jokes, puns, and "twists" of the language.

STAGE III
TEACH

Teach for and with verbal/linguistic intelligence by using the specific tools of this intelligence and apply them to help learn the content, acquire the specific knowledge, and achieve the lesson's goals and/or objectives.

VERBAL/LINGUISTIC



INTELLIGENCE

STAGE IV
TRANSFER

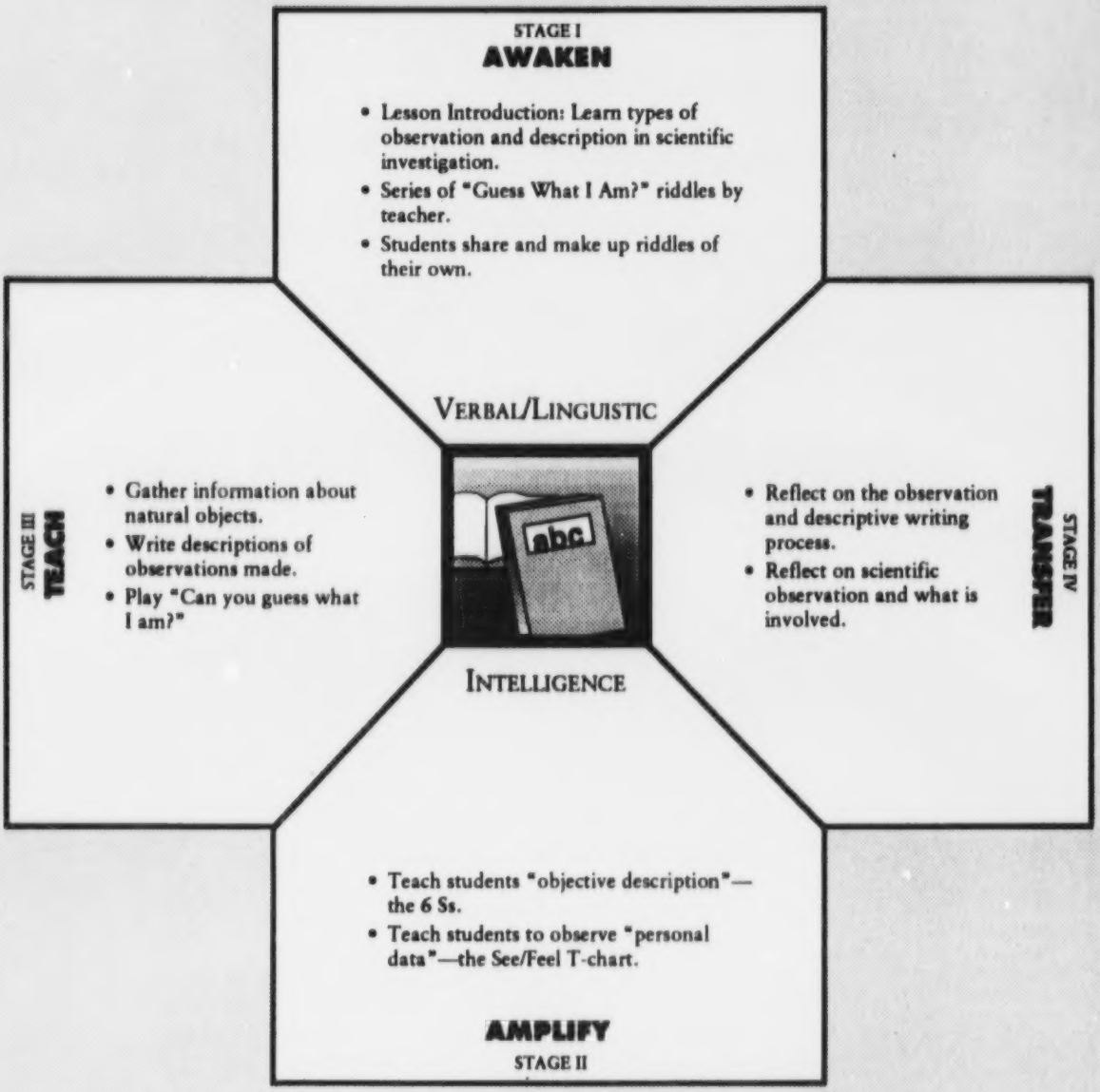
Transfer verbal/linguistic intelligence to life by discussing the intelligence tools used, finding applications beyond the lesson to other curriculum areas, and finally integrating it into the task of living in the world outside the classroom.

Strengthen verbal/linguistic intelligence through practice in writing and reading, learning word meanings, formal speech (including debate and impromptu speaking), story telling, poetry, and having fun with language, through humor, for example.

AMPLIFY
STAGE II

The Model

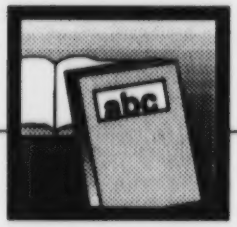
. . . AT A GLANCE


STAGE I
AWAKEN
• Lesson Introduction: Learn types of observation and description in scientific investigation.
• Series of "Guess What I Am?" riddles by teacher.
• Students share and make up riddles of their own.
VERBAL/LINGUISTIC
abc
INTELLIGENCE
STAGE III
TEACH
• Gather information about natural objects.
• Write descriptions of observations made.
• Play "Can you guess what I am?"
STAGE IV
TRANSFER
• Reflect on the observation and descriptive writing process.
• Reflect on scientific observation and what is involved.
• Teach students "objective description"—the 6 Ss.
• Teach students to observe "personal data"—the See/Feel T-chart.
AMPLIFY
STAGE II

The Model *Applied*

"Exploring Objects"

A SCIENCE LESSON WITH



Verbal/Linguistic Intelligence

Lesson Procedures

INTRODUCTION

☛ Verbal/ linguistic intelligence is primarily located in the area of the left hemisphere of the brain known as "Broca's Area" (see brain diagram, p. *xxv*). The particular mental functions that are active when verbal/linguistic intelligence has been "turned on" involve an acute sensitivity to the sound, rhythm, inflection, and meter of words; a sensitivity to the order among words and the various meanings and shades of meaning of words; and an interest in the different practical uses of language. Please refer to the diagram on p. *xvii* to see capacities that are active when working with verbal/linguistic intelligence.

The world is full of interesting and surprising things that can be discovered if we learn to pay attention. In this science lesson students will observe natural objects with their senses (objective observation) and their own feelings/responses about what they are observing (subjective observation). They will then use this information to play the game, "Can you guess what I am?" Tell the students that the lesson will emphasize verbal/linguistic intelligence, so they should pay attention to this during the lesson.

Although the main emphasis of this lesson is teaching with verbal/linguistic intelligence, three other intelligences are consciously employed as well: interpersonal intelligence through cooperative group interactions, logical/mathematical intelligence through the use of cognitive organizers, and interpersonal intelligence through individual writing (especially about feelings).

STAGE I

AWAKEN

☛ Here riddles are used as the trigger. When the brain is presented with a riddle, verbal/linguistic intelligence immediately "kicks into gear" to try and figure it out. It begins searching for clues within the linguistic structure of the riddle and tries to make connections between the riddle and

1. Begin with a series of riddles. Have students see if they can guess the answers:
   - Of all the things in the world I am the shortest and the longest, the fastest and the slowest. I am the thing people waste the most. Yet they need me more than anything else. What am I? (Answer: time)

prior knowledge. It starts looking for word associations. When students are asked to think of their own riddles to "stump the class," the language center of the brain is stimulated even more, for you are asking them to be creative and have fun with their language.

Both the groans and the laughter, as well as the "of course, why didn't I figure that out" at the end of a riddle, are indications that verbal/linguistic intelligence has been awakened and that it is now ready for action.

- Everyone needs my help. I dig out tiny caves and put gold and silver in them. I also build bridges of silver and make crowns of gold. Sooner or later everyone needs my help. Yet many people are afraid to let me help them. Who am I? (Answer: a dentist)
- I have eyes but I see nothing. I have ears but hear nothing. I have a mouth but I can not speak. I always will look the way I look now. If I am young I will stay young. If I am old I will stay old. What am I? (Answer: a person in a painting or photograph)

2. Ask students if they know any riddles they think could stump the class.

STAGE II

AMPLIFY

☛ Practice using the awakened intelligence will improve it. In addition to the intelligence itself getting stronger, we become more familiar with it, and understand more about how it works. We learn how to interpret information we get from it, how to use it most effectively, and in what situations it can most enhance our learning.

Teaching about the 6 Ss introduces the students to a specific intellectual tool you want them to use later in the content part of the lesson itself. It is crucial that you both give them guidelines for using the tool and demonstrate how to use it. Your demonstration should be as close as possible to what you are going to ask them to do with the content of the lesson. Cognitive research has shown that any thinking skill we want our students to have must be explicitly taught and, furthermore, students must have an opportunity to practice it. I believe that the same is true of all of the intellectual capacities. We were born with them, but we must be taught how to use them and then given opportunities to practice if we are to become masters of our intellectual capacities. Working with the 6 Ss also accesses logical/mathematical intelligence as students learn new patterns for thinking.

1. Pass out the 6 Ss worksheet to the students (see blackline, p. 122). Say, "When we describe something we must learn to recognize its attributes. This worksheet can help us with this job." Explain the worksheet as follows:

   6 Ss = Sight — the color, image, or look of something
   Sound — the noise, tone, and voice of something
   Smell — the odor, aroma, and scent of something
   Sense (tactile) — the taste or touch of something
   Size — the height, weight, width, and depth of something
   Speciality — the use of something or what it's good for

   Say, "The unique arrangement of the 6 Ss through our senses allows us to determine what an object is and how it differs from another object. This is how scientists work when they are studying something. They use the 6 Ss."

2. Now practice using the 6 Ss as a class. Draw the 6 Ss chart on the board or overhead. Choose an object in the classroom that all students can see and write the name of the object at the top of the chart.

3. Have students number off by sixes. Assign each group one of the 6 Ss. Now ask students to give you attributes that describe the object according to their assigned part of the 6 Ss.

4. Reflect with the class for a few minutes:
   - How did the 6 Ss help?
   - Which was most difficult? Easiest?
   - What questions do you have about using the 6 Ss?

STAGE III

TEACH

☛ By placing students in cooperative groups you bring in interpersonal intelligence skills as well.

1. Group students in teams of three and assign a role to each student: lab assistant (gathers materials for the team), organizer (keeps team on task and makes sure all parts of the assignment are completed), and encourager (gives group support—keeps them motivated).

2. Have the lab assistants come to the Lab Table and get a box for their team. In each box you have placed an object from nature such as an interesting rock, a large pine cone, a twisted, gnarly twig, a flower, a lump of earth, etc. Say, "Do not let other teams see what your object is. Sit so they can't see. Use the file folder as a screen behind which you can place your object."

☛ Students use the intellectual skill you teach in this part of the lesson to gain information and explore the meaning of the lesson content. The key assumption of the previous two parts of the lesson is that the more aware students become of their own intelligence and how it works, the more they will know how to use that intelligence to access the necessary information/knowledge from a lesson. Now they have a chance to do just that. Writing the sentences helps them pull together the team's brainstorm for themselves and to enhance their own understanding.

ACTIVITY 1

a. Have each student write the name of the object in the space marked "object" on their **6 Ss** worksheet.

b. Have the teams use the **6 Ss** to describe the object that is in their box.

c. Instruct each individual to write three sentences in the space provided on the **6 Ss** worksheet which tell things about the object the team has been analyzing.

d. Have each student quietly read their sentences to the rest of the team so the team can check for the writer's understanding.

☛ The "See/Feel T-chart" again draws on logical/mathematical intelligence. You teach a thinking skill and then provide students with a chance to practice and use it on their own.

3. Now pass out the second worksheet to the teams—the "See/Feel T-Chart"(see blackline, p. 123). Choose an object in the classroom that all students can see, and model for them how to use the See/Feel T-Chart:

- As you look at the object, find shapes, designs, and patterns that are interesting to you. Write these on the T-Chart under "What I See."
- Also try to find the shapes of animals, human faces, etc. in the design of the object and point these out to the students. Write them on the T-Chart.
- Now spend a couple of minutes "thinking out loud" for the class, describing your own feelings about the object you have been describing. Record these feelings on the T-Chart under "How I Feel."

☛ After brainstorming information on the worksheet with their cooperative group, students are asked to translate their observations and feelings into writing. The creative writing exercise allows students to assimilate the team's brainstorm into sentences that are meaningful to them as

ACTIVITY 2

a. Instruct the students to write the name of their object on the second worksheet.

b. Tell them to do what you just did but with their own object—look for interesting shapes, patterns, designs, and pictures in their object. Ask them to record these things in the column labeled "What I See."

individuals. Here you are likewise accessing intrapersonal intelligence as students "look within" at their own feelings and responses.

[NOTE: *Encourage maximum creativity in looking at and describing the object. Remember there are no right answers! Whatever they see and/or find in their object is there for them.*]

c. Have the teams talk quietly about how they feel about the object (e.g., interested in it, bored, excited, etc.).

d. In the space provided on the worksheet, have each individual write two sentences: one about what the team saw or "found" in the object and one sentence about how they feel about it.

e. Have each student quietly read their sentences to the rest of the team so the team can check for the writer's understanding.

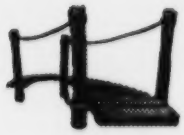
4. Have the lab assistant put the objects back in the box and return them to the Lab Table.

☛ The "Guess What I Am?" game further engages verbal/linguistic skills by asking students to speak extemporaneously about their object in response to questions from others. This requires a synthesis and deeper understanding of their earlier work of describing the objects.

5. Tell the class that they are now going to play a game called "Can You Guess What I Am?" that will let them practice describing things to others.

- Have students form new groups. Tell them to keep the identity of their original group's object a secret because their new group is going to try to guess what the object is.
- The new group will try to guess the object by asking questions that can be answered "yes" or "no."
- When the group thinks they know the "mystery object" they may guess. Then move on to another person until all have had a turn.

STAGE IV



TRANSFER

☛ The goal of the transfer section of the lesson is to help students make the lesson relevant to their lives outside the classroom. Here we want to go beyond the lesson itself, into other curriculum areas, and finally beyond the formal classroom setting.

Students discuss the two observation exercises with the 6 Ss and the See/Feel T-Chart, their reactions to them and other situations where they could be used. Then in "finishing the sentences," they have an opportunity to make conscious the learnings that happened in the lesson. This also helps them distill the essential parts of the lesson for themselves.

Reflect on the lesson with the students in the following manner:

1. Start at the beginning of the lesson asking some or all of the following questions of the whole class:
   - What part was easy in this lesson? What was hard? What was fun?
   - What did you like about the 6 Ss? About the See/Feel T-Chart?
   - What did you not like about these charts?
   - When could we use the 6 Ss and the See/Feel T-Chart in other subjects?
2. Now spend a few minutes having students talk in their game groups about what they learned in the lesson:
   - Have each person in the game group write and then read their answers to the following sentences:

     "One new thing I learned about natural objects is_____."

     "One new thing I learned about working on a team is_____."

A "SPIRAL" ADAPTATION OF THE LESSON

For Middle School Levels

1. Focus the lesson on learning the scientific method for accurate observation and the ability to accurately record observations.
2. Teach about and have students practice two thinking patterns involved in scientific experiments:
   - looking at and analyzing an object (objective); and
   - looking at yourself and your response to the object being observed (subjective)
3. Have students write detailed descriptive paragraphs that report on their factual observations about the objects, and their personal responses/reactions to the object.

For Secondary School Levels

1. Focus the lesson on three thinking/observation patterns at work in science: empirical observation (the facts, the senses), subjective responses (feelings, emotions, etc. about what is being observed), and creative interpretation (trying to fit observations into existing paradigms).
2. Practice each type of thinking/observation in conducting science lab experiments. For each type, have students keep an "Experiment Log" in which they record what they have learned using each of the three methods of observation. Ask them to report on what they have observed to other students.
3. Have students write the steps for a scientific observation project that uses all three types of observation.

ASSESSMENT TIPS

FOR THEIR PORTFOLIOS

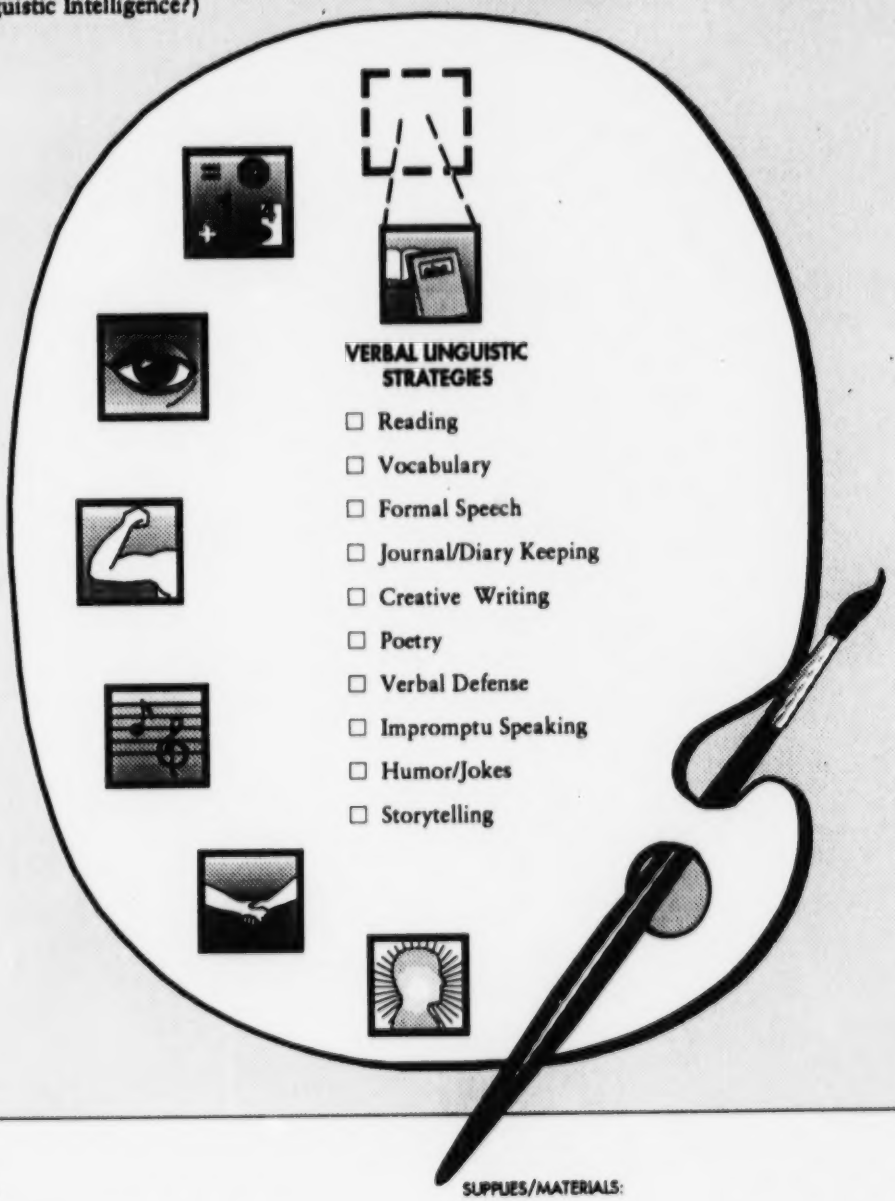
1. Have students include their notes from the 6 Ss worksheet from the team discussion and their individual sentences describing the object.
2. Have them include notes from the "See/Feel T-chart" from the team discussion and their individual sentences.

FOR THEIR JOURNALS

1. Have them draw the object their team studied earlier.
2. Ask them to transpose the sentences they wrote into their journals with their drawings.
3. Have them write their answers to the closing sentences in their journals after reading them to their teams.

Look to the Past . . .

(Rethink a lesson you have completed recently. How would you restructure it to teach FOR and WITH Verbal/Linguistic Intelligence?)



VERBAL LINGUISTIC STRATEGIES

- ☐ Reading
- ☐ Vocabulary
- ☐ Formal Speech
- ☐ Journal/Diary Keeping
- ☐ Creative Writing
- ☐ Poetry
- ☐ Verbal Defense
- ☐ Impromptu Speaking
- ☐ Humor/Jokes
- ☐ Storytelling

SUBJECT AREA:

SUPPLIES/MATERIALS:

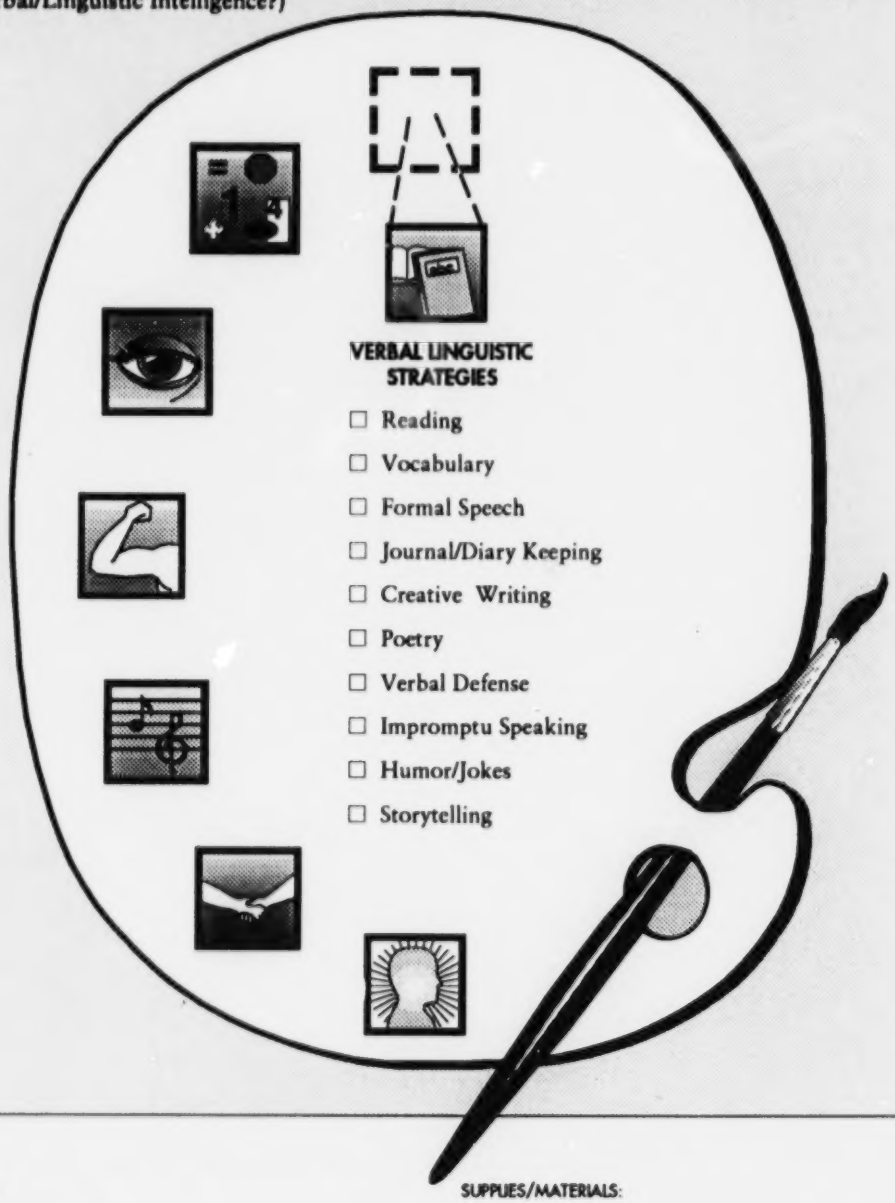
INTELLIGENCE EMPHASIS:

LESSON OBJECTIVE:

ROOM ARRANGEMENT:

Look to the Future . . .

(Think about a lesson you have coming up in the near future. How would you structure it to teach FOR and WITH Verbal/Linguistic Intelligence?)



VERBAL LINGUISTIC STRATEGIES

- ☐ Reading
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- ☐ Impromptu Speaking
- ☐ Humor/Jokes
- ☐ Storytelling

SUBJECT AREA:

SUPPLIES/MATERIALS:

INTELLIGENCE EMPHASIS:

LESSON OBJECTIVE:

ROOM ARRANGEMENT:

Lesson Planning Ideas
Verbal/Linguistic

HISTORY	MATHEMATICS	LANGUAGE ARTS	SCIENCE & HEALTH	GLOBAL STUDIES & GEOGRAPHY	PRACTICAL ARTS & P.E.	FINE ARTS
Play "What's My Line?" with figures from history	Write a series of story problems for others to solve	Teach "concept mapping" to help remember content ‡	Write a humorous story using science vocabulary/formulas	Read stories, myths, and poetry from other cultures	Give verbal explanation of gymnastic routines	Listen to a piece of music and make up a story about it
Debate important issues and decisions from the past	Explain how to work a problem to others while they follow	Write a sequel/next episode to a story or play	Create a diary on "The Life of a Red Blood Cell"	Hold a "Countries of the World" spelling and pronunciation bee	Write instructions for use and care of shop machines	Verbally describe an object while a partner draws it
Create limericks about key historical events	Make up puns using math vocabulary or terms	Create crossword puzzles/word jumbles for vocabulary words	Write steps used in an experiment so someone else can do it	Keep an "Insights from other Cultures for Us" log	Tell another how to run a word processing program—then do it	Tell a partner the steps to a dance while they perform it
Study poetry from different periods of history	Solve problems with a partner—one solves and one explains process	Play "New Word for the Day" game—learn it/use it during the day †	Make up an imaginary conversation between parts of the body	Study a road map and give verbal instructions to get someplace	Pretend you're a radio sportscaster describing a game in process	Turn a Greek/Shakespearean tragedy into a situation comedy
Compile a notebook of history jokes	Create poems telling when to use different math operations	Practice impromptu speaking and writing	Give a speech on "Ten steps to healthful living"	Learn basic conversation in several foreign languages	Play "Recipe Jeopardy"—make questions for answers given	Describe an emotion/mood and play music it suggests

† See Glossary
‡ See Glossary and Appendix C

"Understanding Other Cultures"

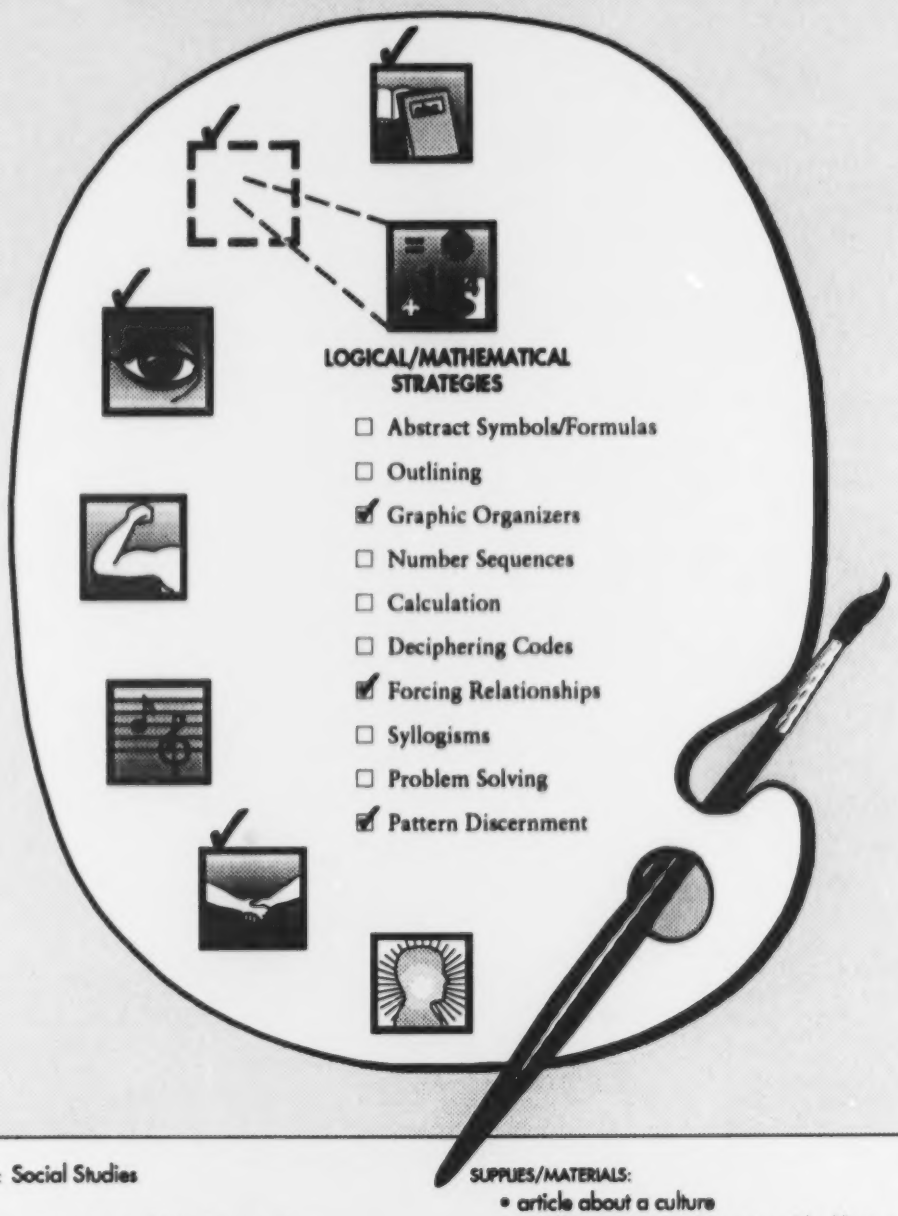
TEACHING WITH

LOGICAL/MATHEMATICAL INTELLIGENCE

CHAPTER 2

A Social Studies Lesson:
Middle School Level

Lesson Palette: *Logical/Mathematical* Emphasis



SUBJECT AREA: Social Studies

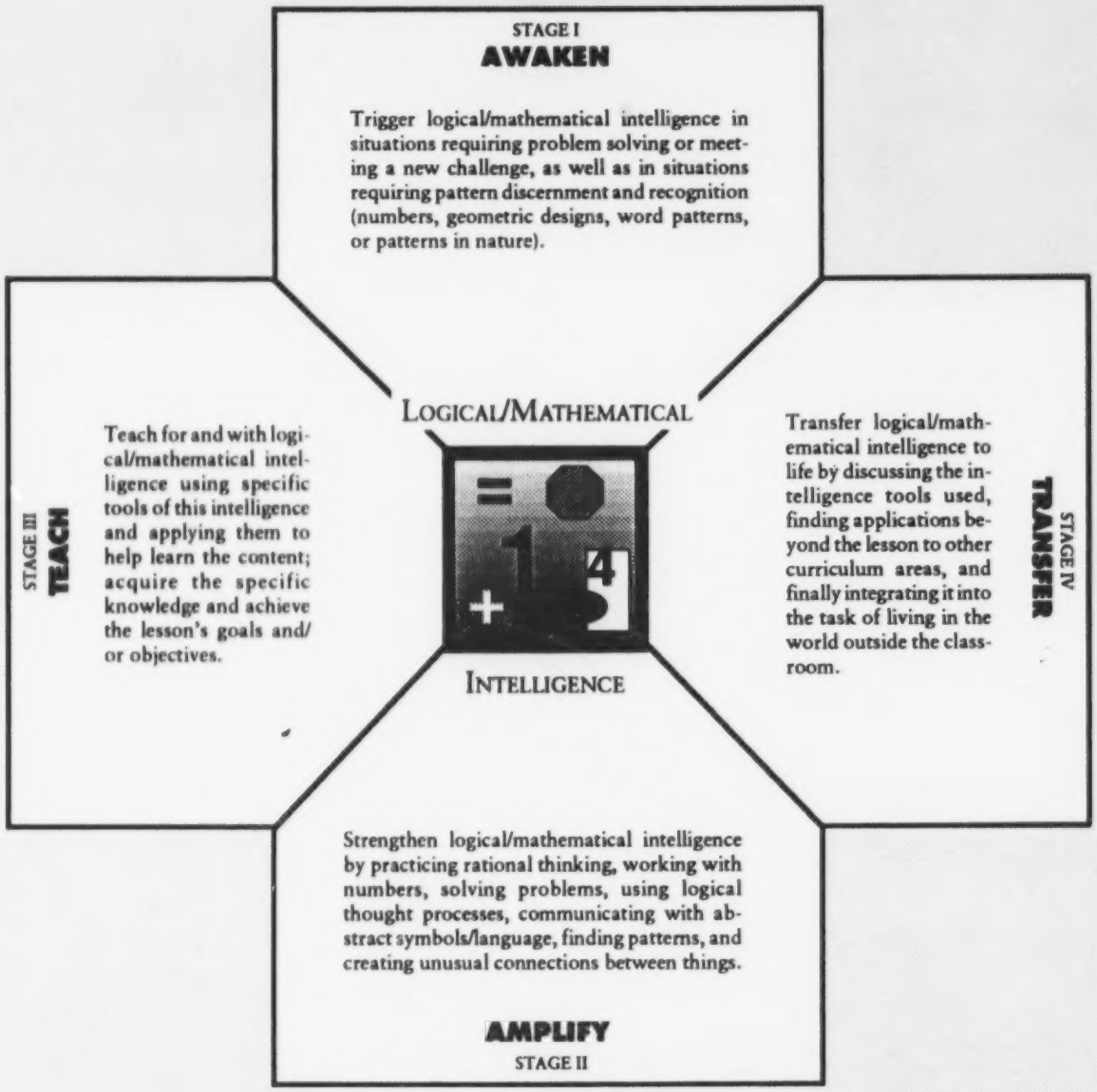
INTELLIGENCE EMPHASIS: Logical/Mathematical

LESSON OBJECTIVE: To recognize the basic economic, political, and social dynamics of another culture and to be able to communicate these to others in a positive manner.

SUPPLIES/MATERIALS:
- article about a culture
- graphic organizer sheet (see blackline, p. 124)
- colored markers
- newsprint

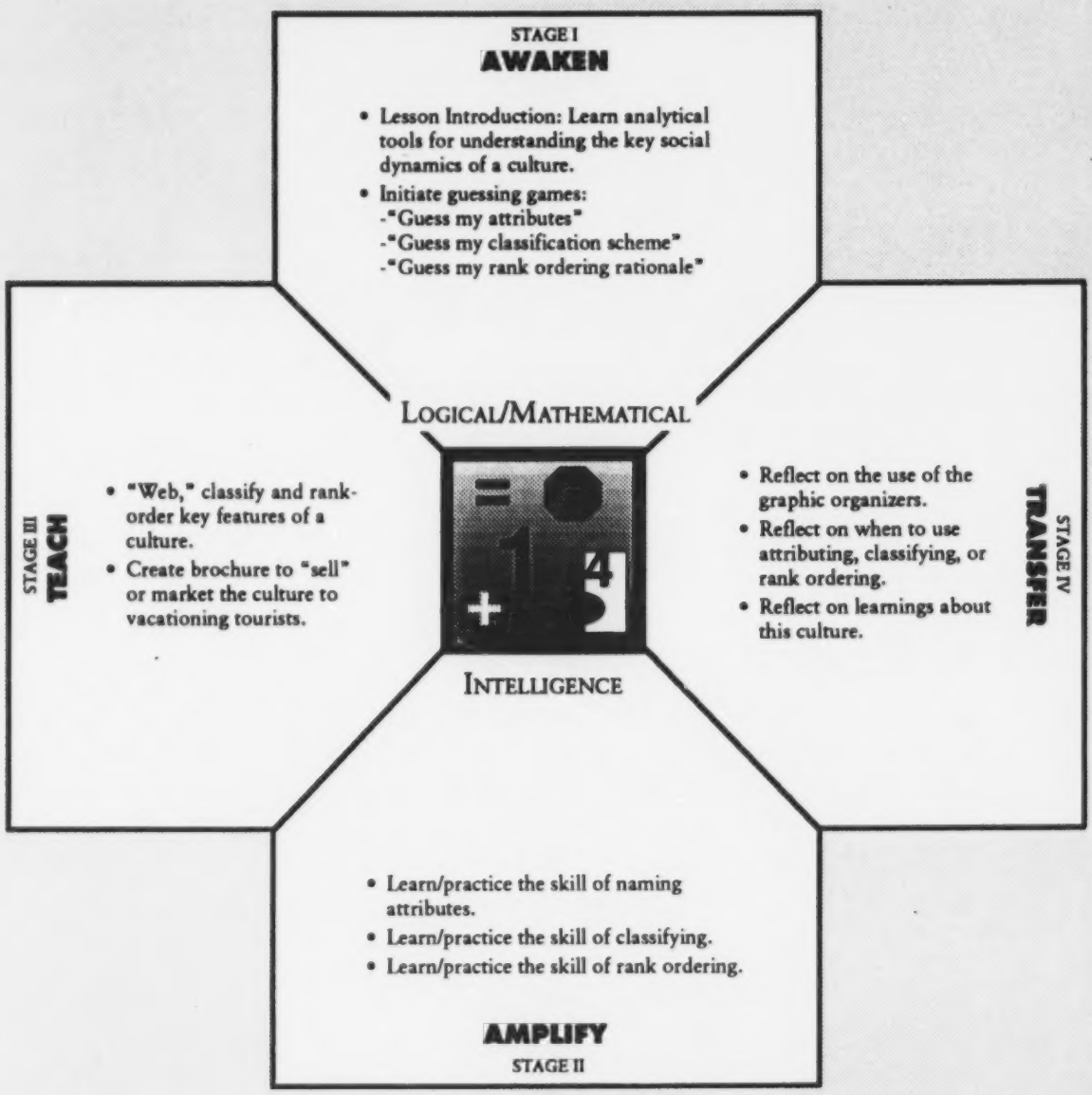
ROOM ARRANGEMENT: Desks moved so students can work together in groups of three

THE LESSON . . .


STAGE I
AWAKEN
Trigger logical/mathematical intelligence in situations requiring problem solving or meeting a new challenge, as well as in situations requiring pattern discernment and recognition (numbers, geometric designs, word patterns, or patterns in nature).
LOGICAL/MATHEMATICAL
INTELLIGENCE
STAGE III
TEACH
Teach for and with logical/mathematical intelligence using specific tools of this intelligence and applying them to help learn the content; acquire the specific knowledge and achieve the lesson's goals and/or objectives.
STAGE IV
TRANSFER
Transfer logical/mathematical intelligence to life by discussing the intelligence tools used, finding applications beyond the lesson to other curriculum areas, and finally integrating it into the task of living in the world outside the classroom.
Strengthen logical/mathematical intelligence by practicing rational thinking, working with numbers, solving problems, using logical thought processes, communicating with abstract symbols/language, finding patterns, and creating unusual connections between things.
AMPLIFY
STAGE II

The Model

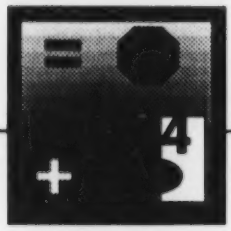
. . . AT A GLANCE


STAGE I
AWAKEN
• Lesson Introduction: Learn analytical tools for understanding the key social dynamics of a culture.
• Initiate guessing games:
-"Guess my attributes"
-"Guess my classification scheme"
-"Guess my rank ordering rationale"
LOGICAL/MATHEMATICAL
INTELLIGENCE
STAGE III
TEACH
• "Web," classify and rank-order key features of a culture.
• Create brochure to "sell" or market the culture to vacationing tourists.
STAGE IV
TRANSFER
• Reflect on the use of the graphic organizers.
• Reflect on when to use attributing, classifying, or rank ordering.
• Reflect on learnings about this culture.
• Learn/practice the skill of naming attributes.
• Learn/practice the skill of classifying.
• Learn/practice the skill of rank ordering.
AMPLIFY
STAGE II

The Model *Applied*

"Understanding Other Cultures"

A SOCIAL STUDIES LESSON WITH



Logical/Mathematical Intelligence

Lesson Procedures

INTRODUCTION

☛ Logical/mathematical intelligence represents an intriguing mix of left- and right-brain hemisphere operations. The ability to read and produce mathematical signs and symbols is a left-brain processing operation not unlike what happens when we learn language. On the other hand, the ability to understand numerical relationships, to discern abstract patterns, and to comprehend logical/mathematical concepts is a right-brain operation. When presented with a problem we believe needs to be solved or a challenge that must be met, the brain operates like a high-tech computer working to find an answer or solution to the problem/challenge.

The ability to look at another culture/nation and appreciate its gifts and contributions to the world is critical to our global future. In this social studies lesson students will learn how to analyze another culture. First, they will brainstorm different things they know about a culture using a web (see glossary, p. 150). Second, they will classify their brainstorm list into economic, political, and social dynamics. Third, they will rank order each classified list according to which factors are the most important for the culture. Tell students that the lesson uses logical/mathematical intelligence and ask them to be aware of using this way of knowing as they work.

The intelligence emphasis of this lesson is logical/mathematical. However, verbal/linguistic intelligence is also used, especially in the initiating "guessing games," the writing activities, and creating the TV script. Visual/spatial intelligence is employed in the creation of the brochure/flyer for the culture. Interpersonal intelligence is incorporated in and through the cooperative group structure and interaction.

STAGE I

AWAKEN

☛ In general, logical/mathematical intelligence is awakened in situations that require problem solving or meeting a new challenge, as well as situations where pattern discernment is needed; for example,

Begin with a series of "thinking patterns" games:

1. "Can you guess my attributes?"—Have three students, from different ethnic backgrounds, who have at least three similar

number patterns, geometric designs, and word patterns.

The "Can you guess my attributes, classification, and rank order" games trigger logical/mathematical intelligence. When the brain is presented with a "hidden pattern" or rationale, as in these initiating games, its natural love of problem solving automatically engages. It relentlessly tries to find the pattern, the rationale, or the schema to make sense out of the situation. This is the heart of logical/mathematical intelligence.

Once you have told the students that there is a hidden organizing pattern or principle behind what you are doing, watch them struggle, argue, and guess, trying to "outfox" you in the games. When you see this happening, this is an indication that logical/mathematical intelligence has indeed been awakened and that it is now ready for action.

attributes (for example, all wearing glasses or tennis shoes, all have curly hair, same heights, etc.) come to the front of the room.

Ask the class to guess why you selected this group. Don't be surprised if they find many more common attributes than your original ones!

2. "Can you guess my classification scheme?"—Gather a group of ten items from a culture you have been studying. Classify the items into three groups (e.g., by color, shape, texture, size, etc.) and ask students to guess why you put certain items together in the same group.

   Again, they will probably come up with more classification categories than you originally had in mind.

3. "Can you guess my rank ordering rationale?"—Show a list of key persons from a culture you have been studying. Rank order the names three different ways (e.g., by dates of death, by best known to least known, etc.). See if students can figure out why you have placed each list in the given order.

STAGE II

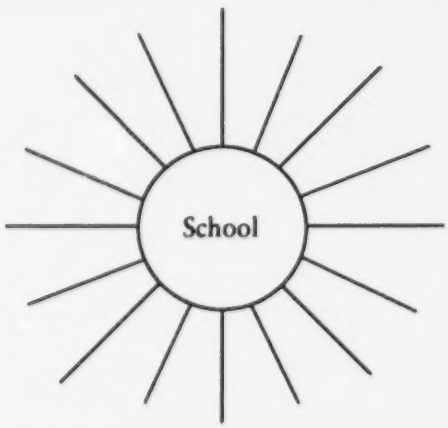
AMPLIFY

☛ Almost anything we do well takes practice. The same is true of working with our intelligence capacities—we must practice using the awakened intelligence and, just like any skill, it will improve. Part of the task here is to train ourselves to understand how the intelligence itself works.

Students need to be introduced to the specific intelligence tools they will be using in the lesson and have an opportunity to practice using them. As you introduce these tools, try to make the "practice session" activities mirror what you want them to do with the content of the lesson.

The attribute web helps strengthen inductive thinking patterns. By having them talk about their school you have hopefully "hooked" them with a topic of interest to them. You are likewise accessing verbal/linguistic intelligence through their dialogue about the school and their writing on the web, and interpersonal intelligence by placing them into cooperative groups. In the webbing they brainstorm the basic data on the school.

1. Introduce attribute webbing to the students. Say, "The web is a diagram that can help describe the attributes of something." Ask the class to pretend the school is a culture. Draw a web on the board/overhead and ask students to brainstorm attributes of your school.



Keep brainstorming until you have at least 25 items on the web. Remind students that the key in brainstorming is to accept all ideas. There are no wrong answers as long as they are a response to the brainstorm question.

☛ The classification chart enhances deductive thinking patterns: it asks them to sort their particular brainstorm information from the web into general pre-established categories (*in the same way they will do later on with data from another culture*), and to make judgments about the data and prioritize it.

3. Introduce classifying to students. Say, "When we classify similar things, or group like things together, it helps us to better understand them." In groups of three, have students briefly classify the brainstorm list of school attributes into four categories—economic, political, social, and symbolic.

CLASSIFICATION CHART

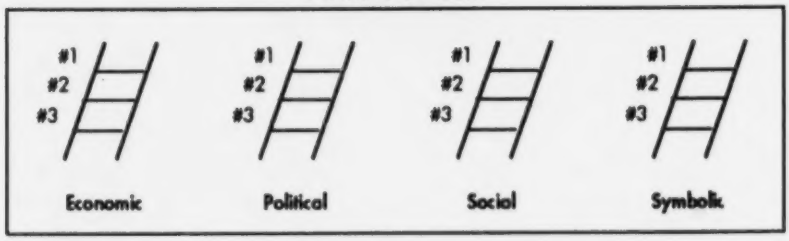
ECONOMIC ATTRIBUTES	POLITICAL ATTRIBUTES	SOCIAL ATTRIBUTES	SYMBOLIC ATTRIBUTES

Have one team share their classification chart. Note similarities and differences with the other teams.

4. Introduce rank ordering to students. Say, "When we rank order things we put them in an order according to how important we think each item is." For each category on their classification charts have the teams decide which item is most important for the school and mark that #1, which is second most important and mark that #2, which is third most important and mark that item #3. Use the rank ordering ladders (see blackline, p. 139).

☛ The rank ordering helps them learn and improve their priority thinking skills. To do this they must make judgments about their data and arrive at a consensus. This further activates and uses interpersonal intelligence capacities.

RANKING LADDERS



Have several groups share what they picked as #1 for each category.

5. Tell students that they have been practicing some logical thought processes that are now going to be applied to a social studies lesson. Reflect on the three skills/processes (attribute webbing, classifying, and rank ordering) by asking students these questions:

- Which of the three was easiest? Most difficult?
- How did they help your thinking?
- What questions do you have about using these organizers?

STAGE III

TEACH

☛ Students apply the logical/mathematical skills you taught in the amplifying part of the lesson to gain knowledge and explore the meaning of the lesson content.

They begin by studying a section from the textbook which describes a particular culture. Each of the cognitive organizers is then applied in turn to that content, and students are asked to organize and reorganize the basic information into different patterns; namely, attributes that describe a culture, attributes organized under pre-set categories, and attributes ranked in terms of their importance to the culture.

1. Using the same groups as before, begin by assigning students the roles of organizer/timekeeper, recorder/materials person, and encourager/motivator within each group.

2. Assignment (Part I): Tell students they will be using the same basic process just used on the school to analyze another culture. Have the students turn to the appropriate page(s) in their textbooks. The lesson has two parts: 1) analyzing another culture and 2) using what they have learned to appreciate the culture. Put the following instructions on the board/overhead (they are to work as a group on these tasks):

> **ACTIVITY 1**
> **Analyzing Another Culture**
>
> a. Read the appropriate section(s) of the text.
>
> b. Brainstorm and list the attributes of this culture using the web.
>
> c. Classify the attributes using the economic, political, social, symbolic matrix.
>
> d. Rank order the first, second, and third most important factor of economic, political, social, and symbolic life for each column on the matrix.

3. Ask students if they have any questions about the assignment. Have the materials person gather supplies for the group—newsprint, markers, and the graphic organizers worksheet (see blackline, p. 124).

4. When the teams have finished Part I, have them post their graphic organizers somewhere where they can easily see them.

5. Assignment (Part II): Tell students they are now going to play a game with the analysis they have been doing of this culture. Post the following on the board or overhead:

☛ The final stage of the lesson is a creative thinking process in which students must synthesize what they have learned about the culture and communicate it to others. Two additional intelligences "get into the act" at this point: verbal/linguistic through the creative writing involved in making up the advertisement and visual/spatial through the creation of the brochure/flyer. Make sure you have plenty of colored markers and/or paints for them to use at this point.

> **ACTIVITY 2**
> **Appreciating Another Culture**
>
> As a team, pretend that you are a travel agency that is trying to convince tourists to vacation in this culture. Using the items on your newsprint, your team is to create two items:
>
> • A brochure/flyer advertising the features of the culture
>
> • A script for a TV advertisement for the culture

6. When the teams have completed their work, have them make their presentations to the rest of the class as if they were salespersons from the travel agency.

STAGE IV

TRANSFER

☛ The goal of the transfer section is to help students find the relevance of the lesson for their own lives. Here we want the lesson to go beyond the lesson itself, into other curriculum areas, and finally into their lives beyond the classroom.

The reflection on using cognitive organizers makes them aware of the patterns for thinking that were used in the lesson and that these same patterns can be employed elsewhere. Sharing what they learned with a partner brings to consciousness the key points of knowledge gained in the lesson. The reflective journal/log helps them make personal connections to and associations with the lesson.

1. Reflect on the lesson with the whole class, beginning with the use of the cognitive organizers:
   - Which of the three graphic organizers did you like most? Why?
   - Which did you like the least? Why?
   - What ideas do you have about other ways you could use these in school (in this subject or another)?
2. Have students conclude the lesson by turning to a partner and discussing the following questions:
   - What new things did you learn about this culture?
   - What was exciting? Surprising? Distressing?
   - What would you say is this culture's greatest gift to our world today?
3. Finally have students write a reflection log entry that begins:

   "I [would/would not] like to visit this culture someday because. . . ."
4. Ask for volunteers to share what they wrote with the rest of the class.

A "SPIRAL" ADAPTATION OF THE LESSON

For Elementary Levels

1. Focus the lesson on understanding and appreciating the ethnic diversity represented in the class, or invite several persons from other cultures to visit the class.
2. Teach how to use a simple classification matrix with the various cultures down the side of the matrix and the foods, language, and family customs across the top.

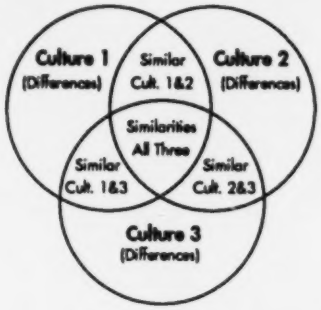
	Food	Language	Customs
Hispanic			
Oriental			
European			
African			

3. Have students fill in the boxes of the matrix with pictures from magazines and/or pictures they draw and color themselves.

For Secondary Levels

1. Focus the lesson on comparing and contrasting key similarities and differences in the values, customs, and beliefs of three cultures.

2. Use the attribute web and classification chart (p. 124), then introduce a three-way Venn diagram organizer for comparing and contrasting the cultures.



3. Role-play a debate on a contemporary issue with students assuming the values, beliefs, and customs of the different cultures in the discussion; for example, discuss technology and the environment, how to achieve world peace, or the pros and cons of a large family.

ASSESSMENT TIPS

FOR THEIR PORTFOLIOS

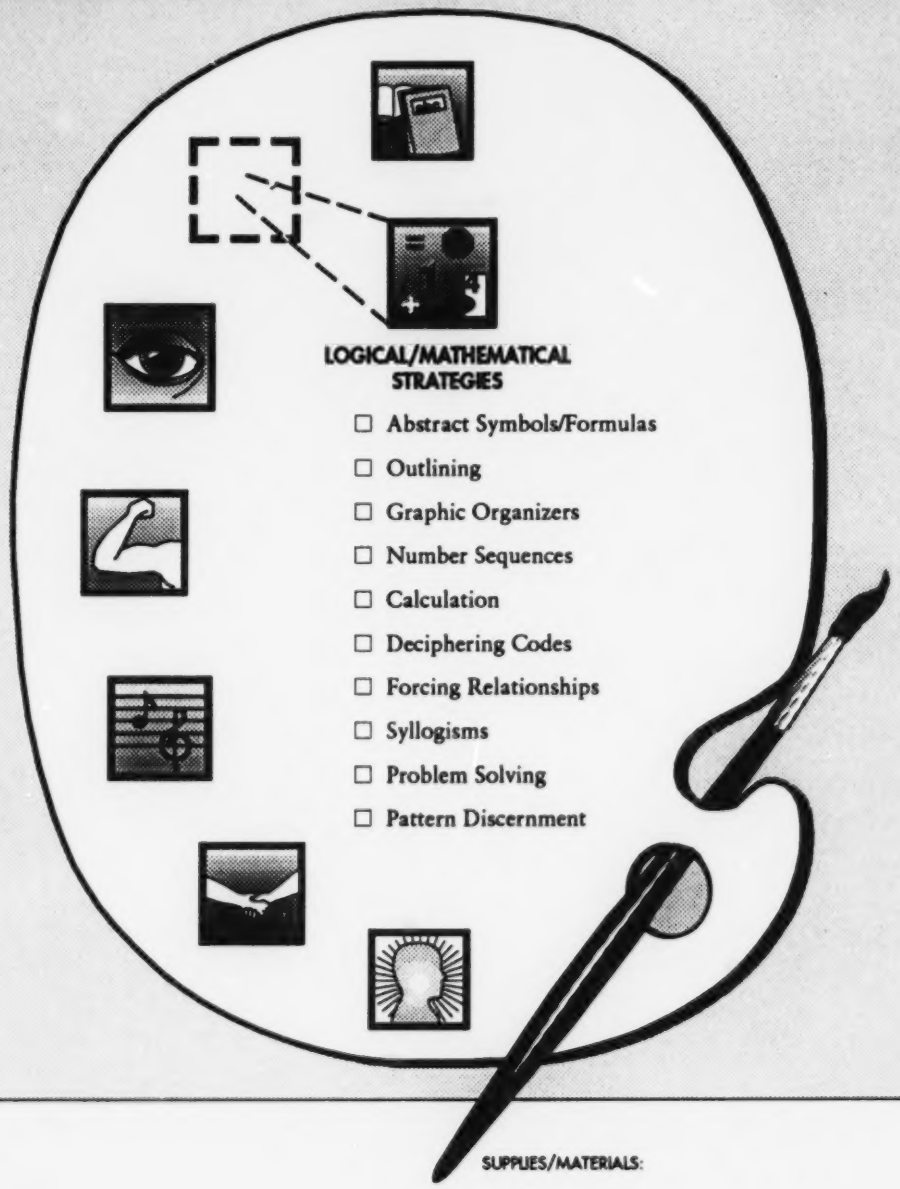
1. Have them include the graphic organizer worksheet with their notes on the team's discussion and analysis.
2. Decide some way to reproduce the advertising brochure/flyer the team created, including the script.

FOR THEIR JOURNALS

1. After discussing the lesson with a partner (#2 of transfer stage), have students make a list of the most important things for them from the lesson.
2. Ask students to write the log entry "I [would/would not] like to visit this culture someday because . . . ." in their journals.

Look to the Past . . .

(Rethink a lesson you have completed recently. How would you restructure it to teach FOR and WITH Logical/Mathematical Intelligence?)



LOGICAL/MATHEMATICAL STRATEGIES

- ☐ Abstract Symbols/Formulas
- ☐ Outlining
- ☐ Graphic Organizers
- ☐ Number Sequences
- ☐ Calculation
- ☐ Deciphering Codes
- ☐ Forcing Relationships
- ☐ Syllogisms
- ☐ Problem Solving
- ☐ Pattern Discernment

SUBJECT AREA:

INTELLIGENCE EMPHASIS:

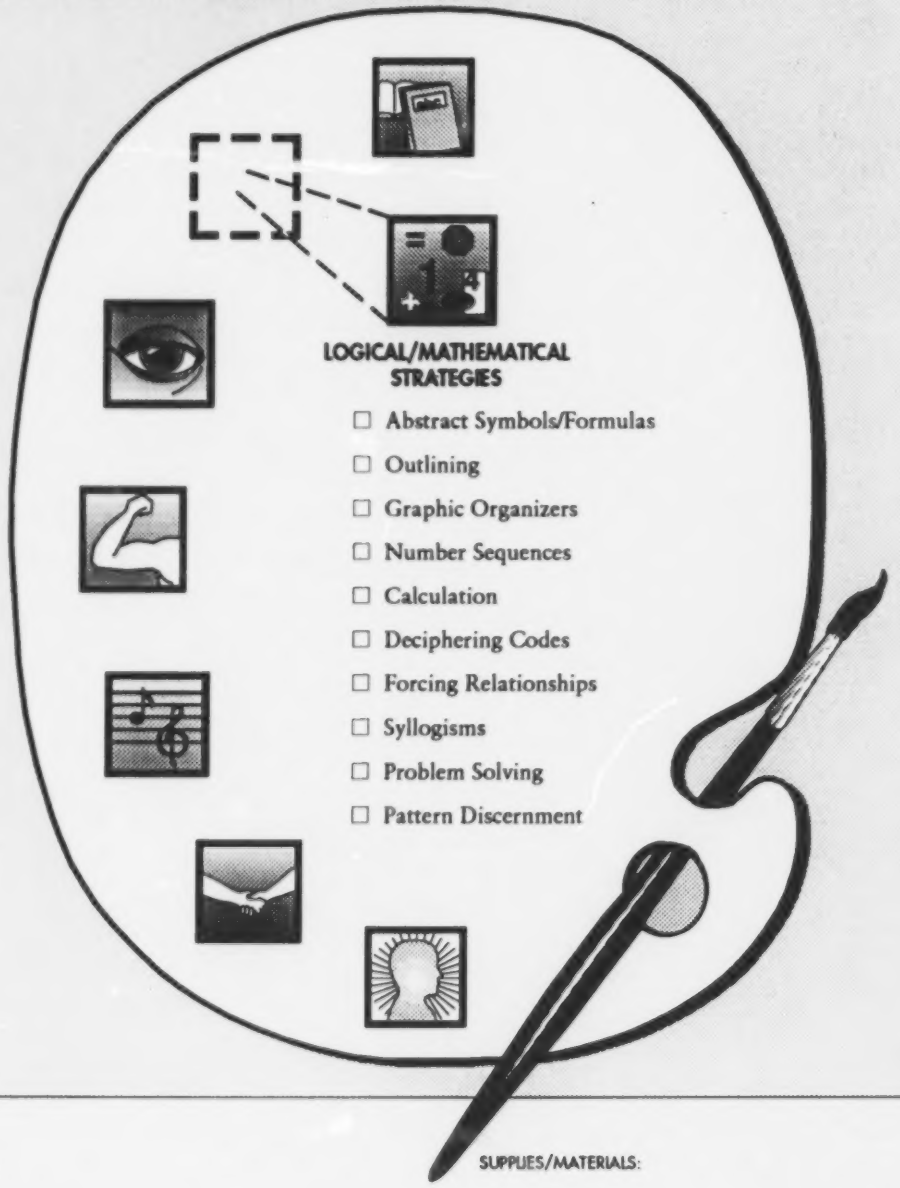
LESSON OBJECTIVE:

SUPPLIES/MATERIALS:

ROOM ARRANGEMENT:

Look to the Future . . .

(Think about a lesson you have coming up in the near future. How would you structure it to teach FOR and WITH Logical/Mathematical Intelligence?)



LOGICAL/MATHEMATICAL STRATEGIES

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- ☐ Outlining
- ☐ Graphic Organizers
- ☐ Number Sequences
- ☐ Calculation
- ☐ Deciphering Codes
- ☐ Forcing Relationships
- ☐ Syllogisms
- ☐ Problem Solving
- ☐ Pattern Discernment

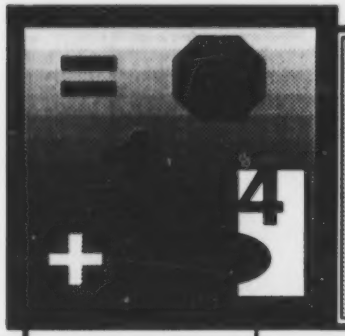
SUBJECT AREA:

SUPPLIES/MATERIALS:

INTELLIGENCE EMPHASIS:

LESSON OBJECTIVE:

ROOM ARRANGEMENT:



Lesson Planning Ideas

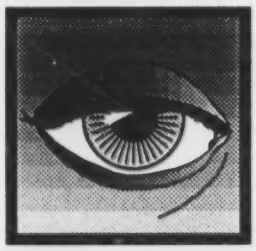
Logical/Mathematical

HISTORY	MATHEMATICS	LANGUAGE ARTS	SCIENCE & HEALTH	GLOBAL STUDIES & GEOGRAPHY	PRACTICAL ARTS & P.E.	FINE ARTS
Find examples where "history repeated itself"	Find unknown quantities/entities in a problem	Predict what will happen next in a story or play	Use the symbols of the Periodic Table of Elements in a story	"Follow the Legend" map-reading games and exercises	Follow a recipe to make bread from scratch	Learn patterns of ten different dance steps
Compare and contrast different periods of history	Teach how to use a calculator for problem solving	Create a 4x4x4 outline on a favorite hobby ‡	Find five different ways to classify a collection of leaves	Play "Guess the Culture" based on artifacts in a time capsule	Find the relation of keyboard actions and computer performance	Compose a piece of music from a matrix ‡
Ask "Fat and Skinny Questions" about key historical decisions ‡	Create number sequences and have a partner find the pattern	Learn to read, write, and decipher "code language"	Do a KWL goal-setting chart for a study of AIDS ‡	Rank-order key socio-economic factors that shaped a culture	Design a physical exercise routine using a matrix ‡	Use a Venn diagram to analyze characters in a play ‡
Create time sequence charts with titles for major eras of history	Mind-map proofs for geometry theorems ‡	Analyze similarities and differences of various pieces of literature	Learn the pattern of successful and reliable scientific experiments	Predict what will happen in several current-event stories	Create problem-solving scenarios for shop machines	Create a "paint-by-numbers" picture for another to paint
Predict what the next decade will be like based on patterns of the past	Design classification charts for math formulas and operations	Use a "story grid" for creative writing activities ‡	Practice webbing attributes of various systems of the body ‡	Learn cause and effect relations of geography and geological events	Make a classification matrix on meaning(s) of computer symbols ‡	Analyze plays using the classical dramatic structure model †

† See Glossary
‡ See Glossary and Appendix C

"The Incredible Journey of Photosynthesis"

TEACHING WITH

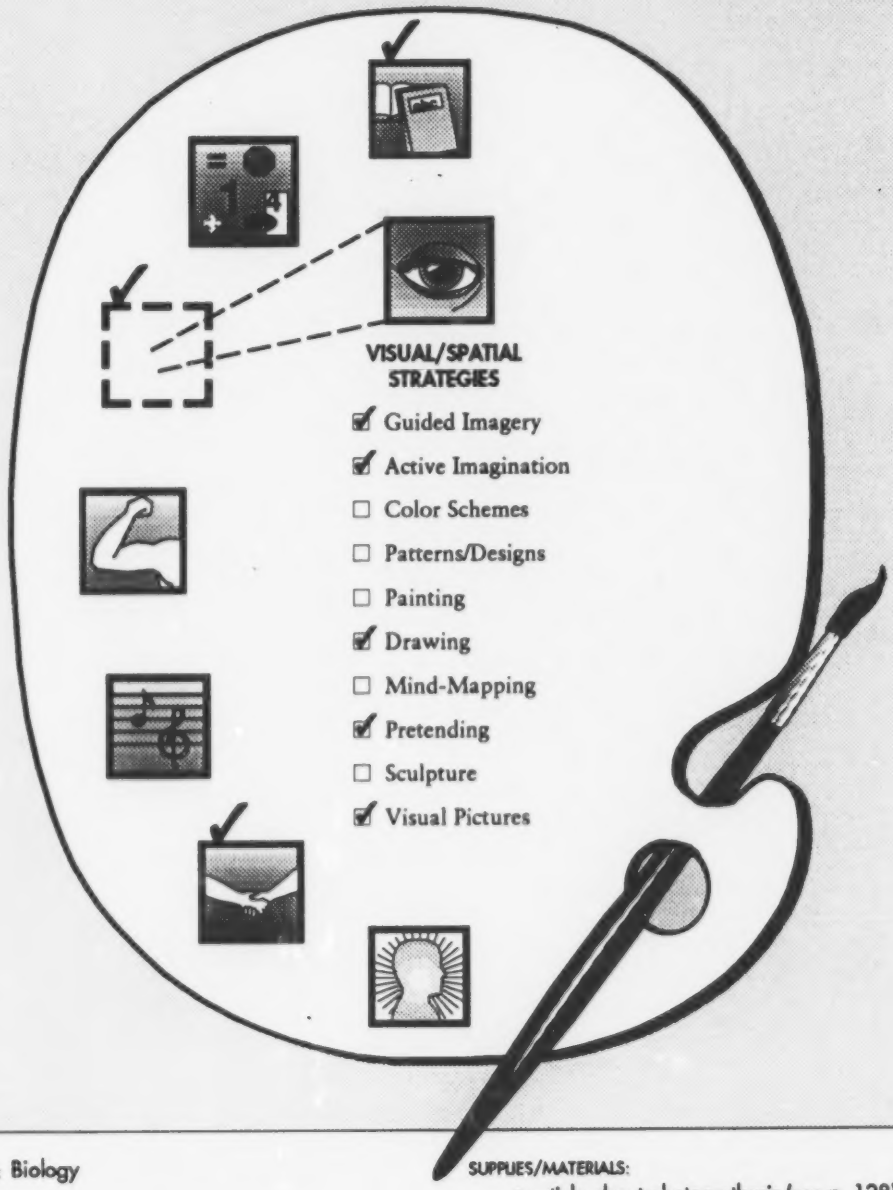


VISUAL/SPATIAL INTELLIGENCE

CHAPTER **3**

A Biology Lesson:
Secondary School Level

Lesson Palette: *Visual/Spatial* Emphasis



SUBJECT AREA: Biology

INTELLIGENCE EMPHASIS: Visual/Spatial

LESSON OBJECTIVE: To understand what occurs in the process of photosynthesis in a plant and to be able to communicate this to others through diagrams and/or pictures.

SUPPLIES/MATERIALS:
- article about photosynthesis (see p. 128)
- colored markers and/or paints
- art paper for drawing

ROOM ARRANGEMENT: Desks moved so students can work in groups of three

THE LESSON . . .

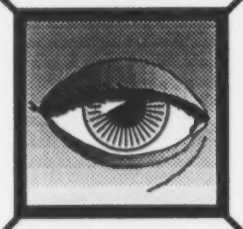
STAGE I
AWAKEN

Trigger visual/spatial intelligence by presenting the mind with and/or creating unusual, delightful, and colorful designs, patterns, shapes, and pictures. Engage in active imagination through such things as guided imagery and pretending exercises.

STAGE III
TEACH

Teach for and with visual/spatial intelligence by using the specific tools of this intelligence and apply them to help learn the content, acquire the specific knowledge, and achieve the lesson's goals and/or objectives.

VISUAL/SPATIAL



INTELLIGENCE

STAGE IV
TRANSFER

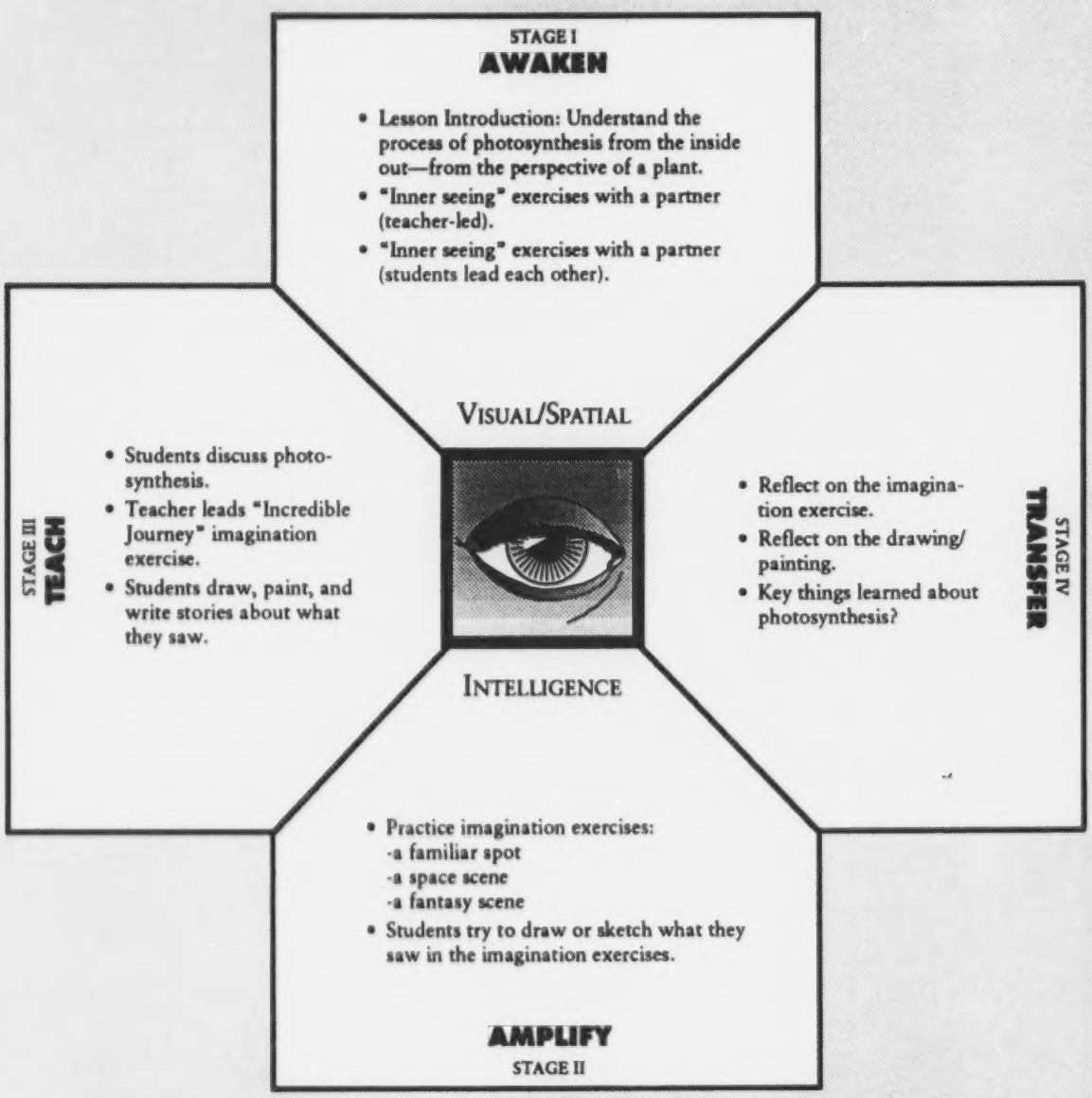
Transfer visual/spatial intelligence to life by discussing the intelligence tools used, finding applications beyond the lesson to other curriculum areas, and finally integrating it into the task of living in the world outside of the classroom.

Strengthen visual/spatial intelligence using active imagination to picture things that are outrageous or fantastic, using visual media such as paints, colored markers, or clay. Use mind-mapping skills, and drawing patterns/designs.

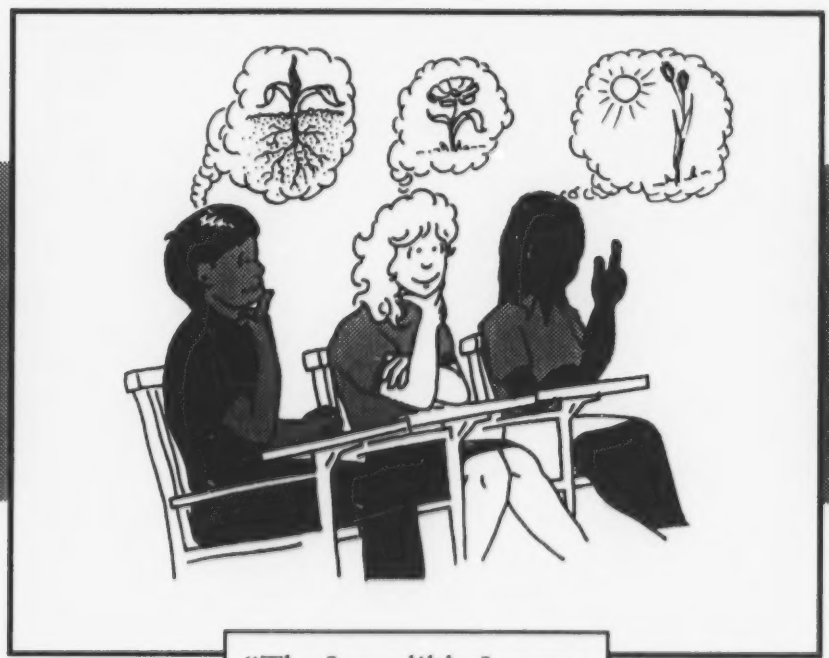
AMPLIFY
STAGE II

The Model

. . . AT A GLANCE


STAGE I
AWAKEN
• Lesson Introduction: Understand the process of photosynthesis from the inside out—from the perspective of a plant.
• "Inner seeing" exercises with a partner (teacher-led).
• "Inner seeing" exercises with a partner (students lead each other).
VISUAL/SPATIAL
STAGE III
TEACH
• Students discuss photosynthesis.
• Teacher leads "Incredible Journey" imagination exercise.
• Students draw, paint, and write stories about what they saw.
• Reflect on the imagination exercise.
• Reflect on the drawing/painting.
• Key things learned about photosynthesis?
STAGE IV
TRANSFER
INTELLIGENCE
• Practice imagination exercises:
-a familiar spot
-a space scene
-a fantasy scene
• Students try to draw or sketch what they saw in the imagination exercises.
AMPLIFY
STAGE II

The Model *Applied*



"The Incredible Journey of Photosynthesis"

A BIOLOGY LESSON WITH

Visual/Spatial Intelligence

Lesson Procedures

☛ The realm of visual/spatial intelligence is the realm of images, patterns, colors, designs, textures, pictures, and the like. The process of seeing something with the "external" eyes (mostly from the stimulation of the retina) activates the visual area of the brain. In the case of visual/spatial intelligence, we are mostly dealing with a right-brain hemispheric operation—an area known as the "parietal lobes" (see brain diagram, p. xxv) When sets of neuronal pathways "fire," we experience an image. Researchers have found that the firing of these neuronal pathways can also be caused by internal stimulation. Many of the same physical operations present in normal, external-eye perception are likewise present in mental imagery, when one is "seeing with the mind's eye." Often the mere creation of a strong mental image will cause us to react as if the imagined thing is real.

INTRODUCTION

The natural world is an awesome miracle if we but open our eyes and see. In this lesson students have an opportunity to explore and understand the process of photosynthesis in a unique way—from the inside out; that is, from the perspective of the plant! The lesson is modeled after the movie "The Incredible Journey" where human beings became microscopic and traveled through the body in the bloodstream. In this lesson, students imagine that they can journey into a plant and participate in the amazing photosynthesis process. They will be using their visual/spatial intelligence in the lesson so ask them to be aware of this and notice what happens.

In addition to visual/spatial intelligence, this lesson employs verbal/linguistic and interpersonal intelligence. The verbal/linguistic emphasis can be seen in the writing students do in the transfer section of the lesson. The interpersonal emphasis is in the cooperative group work students do throughout the lesson.

STAGE I

AWAKEN

☛ Visual/spatial intelligence is awakened by presenting the mind with unusual, delightful, and colorful designs, patterns, shapes, and pictures, and engaging in active imagination through such things as imagination and pretending exercises.

When you engage in this kind of

1. Tell students you are going to ask them to see various things with their mind's eye, and that you are going to help them access and "turn on" the parts of the brain that will help them do this. Ask students to find a partner, put their heads together, and close their eyes. Tell students that you are going to suggest a series of images to them and they are to tell their partner what they see

image association, the visual part of the brain immediately creates pictures, memories, emotions, and other sensations that it connects with the image suggested. Not only do the students "see" their own associations, but they also receive further "image input" as their partners describe their respective associations. By the time you have completed the image associations, just listen to the "buzz" that will be present in the room!

with their "mind's eye" (this is like a "word association test" but with images instead):

- an animal
- a machine
- a park
- a storm
- an old person
- a trip
- a food
- a relative
- swimming
- a party
- yourself as a baby
- shopping

2. Have students discuss the process of "inner seeing" with each other. Have them ask each other "What happened?" and "What was this like?"

3. Ask several partners to share some of their observations with the whole class.

STAGE II

AMPLIFY

☛ One of the key findings of researchers is that, although one or two of our intellectual capacities tends to be more developed than the others, they can all be strengthened and improved. This is especially true of our visual/spatial potentials. When we were much younger our visual/spatial capacities were generally very strong and often second nature to us in day-dreaming, pretending, and role playing. However, as we get older, we learn that this world of active imagination, is "only for children," so we tend to use these capacities less and less. Nevertheless, contemporary research has documented that the capacity for imagination is inherent in the nervous system, and thus can be relearned and improved.

Here they imagine a familiar scene and then sketch on paper what they have seen inside their heads. Remember, this is not an art lesson! It is therefore important to emphasize that whatever they are seeing is fine and however they represent on their papers what they are seeing is perfectly acceptable.

1. Tell students that in their biology lesson today they will be participating in an imagination exercise and that they will sketch what they have seen using their mind's eye. But first lead them in a few practice imagination exercises so they have an understanding of the basic process.

2. Pass out blank paper and colored pencils/markers to students. Students are to work as individuals this time. Instruct them to try to imagine as vividly as possible the things you are going to suggest to them.

3. Begin by having them close their eyes, take several deep breaths, and relax as much as they can. After a couple of minutes say, "Now I'd like you to imagine that you are in your bedroom at home. Look around and try to see as much as you can with your mind's eye. (pause) Notice whether or not the bed is made. (pause) Are any clothes lying out? How light is it? Notice any other special things in the room. (pause) Now on a sheet of blank paper, briefly draw or sketch what you are seeing in your mind's eye."

4. Have students share their drawings and talk about the imagination exercise with their earlier partner.

5. Tell students that you want them to practice this once again, but this time they will have to use their imagination even more, for you'll be taking them on a journey to an unfamiliar place. Again ask them to close their eyes and relax, breathing deeply from the abdomen. After a couple of minutes suggest the following images to the students:

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☛ The purpose of the second imagination exercise is to help students practice using their imagination more fully by imagining an unfamiliar scene. Granted, they are likely to draw pictures they have seen of outer space, but their active imagination must "fill in the gaps" and this is point of the exercise. This practice is important for it is more akin to the "photosynthesis journey" on which you take them later in the lesson.

☛ It is important to recognize that there is no "wrong" in an imagination exercise. Whatever happens, whatever they experience is "right!" Make sure students are aware of this.

- Imagine that you are lying down in a favorite outdoor place of yours. Take a couple of moments to think of that place and then, as vividly as you can, imagine that you are there. (pause)
- Imagine that you are lying there, completely relaxed, and enjoying yourself, and that you are able to slowly float upwards into the clouds. Let yourself do that now. Try to notice everything you can about what this is like. (pause)
- Now imagine that you can continue to float higher and higher until you leave the atmosphere of the earth and you find yourself in space. Spend a few minutes looking around and getting a sense of what space is like. (pause)
- When you feel ready, allow yourself to float back into the earth's atmosphere, into the clouds, and back to the favorite spot where you began. (pause)
- Now open your eyes and quickly sketch what you saw and experienced on your trip to space on a piece of blank paper.

6. Once again have students briefly share their drawings and their experience of the imagination exercise with a nearby partner.

STAGE III

TEACH

☛ The traditional academic content part of the lesson can either be a review of previously studied material, or it could be an introduction to a more in-depth study of photosynthesis.

Whether you use the article provided or another from your own biology textbook is not important (if you do use a different article, you will need to make alterations in the guided imagery instructions so they match the article the students have studied.) The purpose of reading the article is for students to have the basic stages of the photosynthesis process in a fairly concise form, for it is these stages that will be the stages of the guided imagery journey on which you take them after their initial study. At this point you are also accessing both verbal/linguistic intelligence through the reading and discussion, and interpersonal intelligence in and through the cooperative group structure for the remainder of the lesson.

1. Have students get into cooperative groups of three. Assign the roles of organizer, encourager, and checker. Have the organizer gather supplies for the team: colored markers/pencils, blank paper, and a copy of the the article on photosynthesis (see p. 128).

2. Instruct students to read the article as a team and answer the discussion questions. Tell them that they are to help each other understand the process; that is, what happens during photosynthesis.

3. Now tell the class that they are going to have a chance to experience the process of photosynthesis. Ask if any of the students have seen the movie "The Incredible Journey." If so, have them tell the story to the rest of the class. If not, you tell it (see lesson introduction above). Say, "Today we are going to take an incredible journey into a plant and experience the process of photosynthesis first hand."

4. Introduce the process by telling the students that you are going to lead them in an imagination exercise as you did earlier.
   - Ask them to think about some of the things that are in a factory, such as various machines, an energy supply, workers, a water supply, etc. Tell them they are to imagine that the leaf is

a small photosynthesis factory. Tell them that you will be taking them on a tour of this factory so they can see and experience the stages of photosynthesis they have just been reading about.

- After each stage of the tour tell them you will pause and give them a chance to briefly sketch what they are seeing in their mind's eye on a piece of paper.
- At the end of the tour the team will look at the different pictures individuals have drawn and incorporate different individual pictures into a single picture of the photosynthesis process. They are to "let their minds run wild," so to speak, and see how much they can "get into" this journey.

5. Now begin the process by asking students to close their eyes. Instruct them to breathe deeply and relax as much as possible for a few minutes. When you sense they are ready, lead them in the process outlined below. Read the following instructions to the class:
   - Imagine that you are in the middle of a beautiful, green woods. It is a gorgeous spring day and the warm sun is shining brightly above. (pause)
   - Pretend that you have the power to make yourself much, much smaller than you are now. Maybe you do this as they did in "The Incredible Journey" movie by drinking some special drink, or maybe there is a special seed you eat, and possibly you have some other way to do this, but now I'd like you to make yourself very, very tiny. In fact, I'd like you to make yourself so small that you become microscopic. I'll now give you a few minutes to do this by whatever means you choose. (pause)
   - You have now become so small that you are able to walk through a pore in the leaf of a nearby plant. As you enter the plant you suddenly find yourself surrounded by hundreds of thousands of cells. As you look more closely at one of the cells you notice that it is like a little factory. There is a supply of water flowing through it from the veins of the plant. There is an acceptor module (like a special chamber in the factory) that is gathering carbon dioxide as it enters the plant through the pores in the leaf.
   - Now, open your eyes and briefly sketch a cell as if it were a factory. Include the water supply, the carbon dioxide "acceptor chamber" (molecule), and anything else you are seeing or sensing. What does look like? (pause)
   - Close your eyes again. As you continue walking around this cell, you notice a football-shaped, green plate that seems to be seeking out and turning in the direction of the sunlight that is striking the surface of the leaf. You remember from your reading that this is the chloroplast. It is the light radar system of the plant and it can move to take best advantage of the light.

☛ It is very important that you find ways to help students "get into" the imagination exercise. We all imagine things in our mind's eye, but not in the same way. Some students will "see" in their minds with the same clarity that they see TV. Others will only have a vague impression of what you are suggesting. Still others may "see" nothing at all in the traditional sense of seeing, but may have an "inner feeling" for what you are suggesting. In any guided imagery, success is whatever works for the individual. There is no right way! If the images suggested aren't working, give students permission to cheat! Have them pretend it is working, or even better, tell them they can change the images for themselves so they do work. With practice, "inner seeing" can be improved.

☛ Doing the exercise with the eyes closed generally helps the active imagination work better. It also helps students stay focused on the journey and not get distracted. However, if any are uncomfortable with closing their eyes, make sure they know they can keep them open. But ask them to experiment with closed eyes if they want.

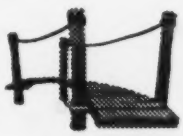
- Pause for a moment again and add the chloroplast "light radar system" to your picture. What does this look like in your mind's eye? (pause)
- As you look more closely at the cell you notice that there are many chloroplast "light radar stations" stacked on top of each other. In between the chloroplasts is a green, sponge-like substance that you suddenly know is the chlorophyll molecules—the plant's light absorbing unit. You notice the chlorophyll molecules soaking up the sunlight. Again, pause for a moment and draw what you are seeing. (pause)
- Now close your eyes again. You hear the sound of water and notice that it is flowing into the cell from the veins of the leaf. Pause and add this to your picture. (pause)
- Close your eyes again. Focus again on the chlorophyll. You suddenly become aware that the chlorophyll molecules are much more than sun-sucking sponges. They are like little reactors in and of themselves. As they get more and more charged with energy from the sun, they begin to split the water molecules flowing through the cell into hydrogen and oxygen. The oxygen is expelled back into the atmosphere through the pores of the leaf and the hydrogen atoms are seized by a special "escort module" and held in a special place for later in the process. Open your eyes and draw what you are seeing—the chlorophyll splitting the water molecule, the oxygen being expelled, and the hydrogen being held by the escort module. (pause)
- Close your eyes again. Once the chlorophyll has split the water molecules, it gives off more energy as it returns to its normal state. This energy, however, turns on a new molecule, the ATP. ATP is like an electric generator that empowers the escort module that is holding on to the hydrogen atom. Pause now and sketch this image. (pause)
- The escort module now leads the hydrogen to the carbon dioxide acceptor module and they combine to form PGA molecules. These PGA molecules combine with each other to form sugar, and the sugar is placed in storage areas in the plant to be used later for food. For the last time now, pause and draw what this part of process looks like to you in your mind's eye. (pause)
- The process is now complete. Pause for a moment and allow yourself to appreciate what you have just experienced. Reflect on the amazing process of photosynthesis in this microscopic factory that makes food from sunlight. (pause)
- Now, as you are ready, find your way back to the pore in the leaf of the plant where you originally entered and return to the place where you began. Slowly allow yourself to become your normal size again, by whatever means you choose. (pause)
- As you are ready, bring yourself back to this room, and to this time and space. Open your eyes and stretch, looking at your

picture of the "photosynthesis factory," remembering the journey in which you have been participating.

6. Now give time for each student to share his or her picture with the other members of the team.
7. Pass out poster paper and colored markers to each team and have them create a single picture of the "photosynthesis factory" based on the ideas from the different pictures the individual members of the team have drawn. Make sure they know that they are to include ideas from each member of the team and that you want the individual pictures attached to the final product so you can check to make sure each person has contributed to the final drawing.

☛ Every idea of each individual does not need to to be included in the final picture, but you want some of the ideas from each member of the team to be included in the final product.

8. Have three teams get together and share their final pictures with each other. Note similarities and differences in the pictures of the factories.



TRANSFER

STAGE IV

☛ The goal of the transfer part of the lesson is to help students take what they have learned in the lesson and apply it in other areas of their school work and in their everyday lives outside of school.

Reflection on the process serves two metacognitive functions: it helps students be more aware of their own visual/spatial intelligence capacities and helps them think about how these capacities can be improved. The reflective log/journal writing allows students to distill the key points of the lesson for themselves in language and terminology that makes sense to them.

If you like, use the "Discussion Questions" blackline (p. 125) to process the lesson with the entire class.

1. Reflect on the imagination exercise with the students in the following manner:
   - What happened in the imagination exercise? What what was it like for you?
   - What surprised you? What was exciting? What was difficult?
   - How was this imaginary journey different from just reading about photosynthesis?
   - What new things did it add to your understanding?
2. Reflect on the learnings from the content part of the lesson:
   - Ask students to write a reflection in their logs describing their journey into the cell factory of the plant. The log is to be titled, "A Day in the Life of a Plant Cell."
   - Ask for volunteers to share something from their log entry.

A "SPIRAL" ADAPTATION OF THE LESSON

For Elementary Levels

1. Focus the lesson on understanding the different parts of a plant and the function each part performs; for example, the roots absorb water and nutrients from the earth, the leaves soak up sunshine from which the plant makes its food, etc.

2. Have students draw pictures of plants showing all of the different parts discussed above. Then let them paint their pictures with water colors. You could also have them make a plant from clay.
3. Ask students to pretend they can talk to their plant and ask it questions about what it's like to be a plant. Pretend that the plant can answer. Let the plant ask the students questions about what it's like to be human.

For Middle School Levels

1. Focus the lesson on learning about the life of a plant that is beyond what the naked eye can see; for example, pores in a leaf, the different kinds of cells that make up a plant, the tiny veins, etc.
2. Have students observe differents parts of plants under a microscope and draw what they are seeing on paper using colored markers and/or pencils.
3. Place students in cooperative groups and have them paint a large mural that shows the inner aspects of the life of a plant and incorporates the different things they have seen under the microscope. The murals are to tell the story of the life of a plant from the inside out.

ASSESSMENT TIPS

FOR THEIR PORTFOLIOS

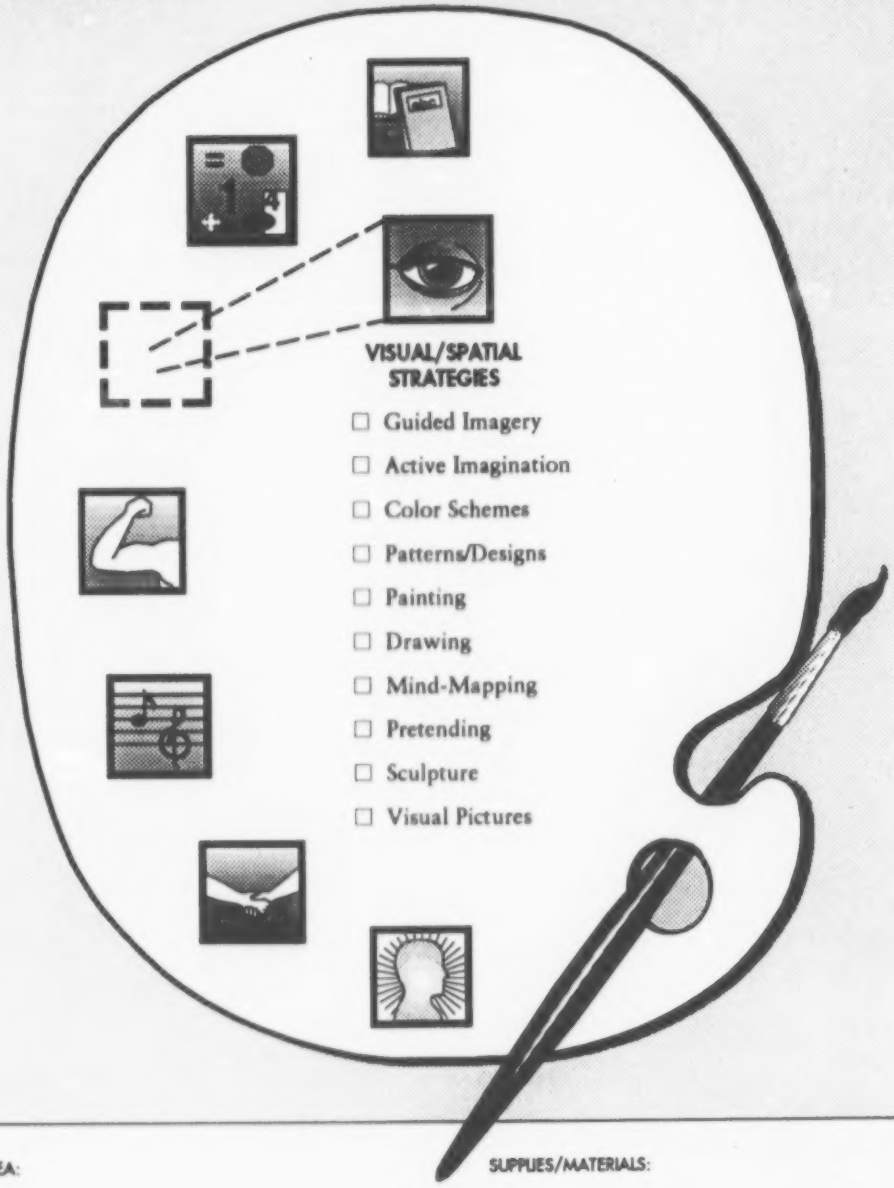
1. Have them include their individual picture drawn during the "Incredible Journey" imagination exercise.
2. Ask them to decide on a way to reproduce the team's composite drawing for each individual's portfolio.

FOR THEIR JOURNALS

1. Have students include their log reflection "A Day in the Life of a Plant" in their journals.
2. Have students write about what happened in the lesson affectively and cognitively and/or about their learnings on visual/spatial intelligence.

Look to the Past . . .

(Rethink a lesson you have completed recently. How would you restructure it to teach FOR and WITH Visual/Spatial Intelligence?)



SUBJECT AREA:

SUPPLIES/MATERIALS:

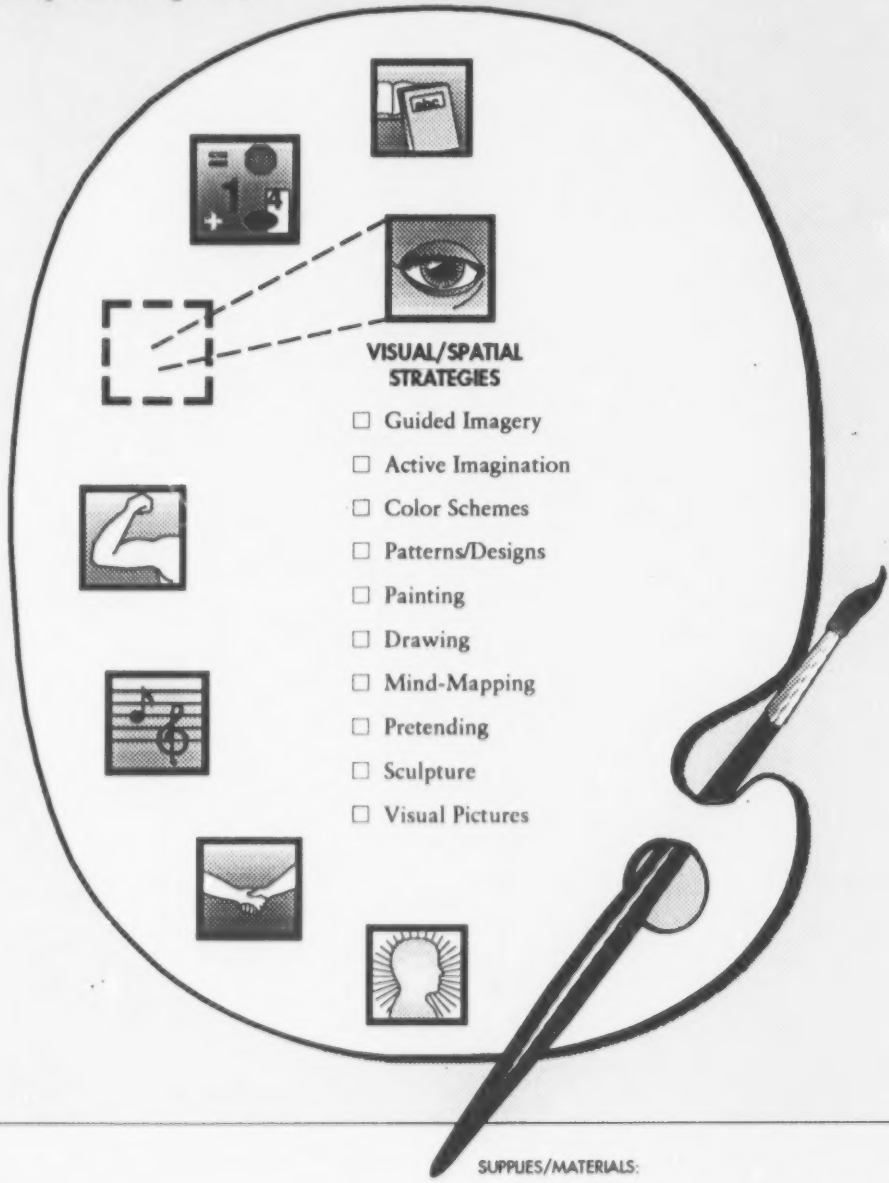
INTELLIGENCE EMPHASIS:

LESSON OBJECTIVE:

ROOM ARRANGEMENT:

Look to the Future . . .

(Think about a lesson you have coming up in the near future. How would you structure it to teach FOR and WITH Visual/Spatial Intelligence?)



VISUAL/SPATIAL STRATEGIES

- ☐ Guided Imagery
- ☐ Active Imagination
- ☐ Color Schemes
- ☐ Patterns/Designs
- ☐ Painting
- ☐ Drawing
- ☐ Mind-Mapping
- ☐ Pretending
- ☐ Sculpture
- ☐ Visual Pictures

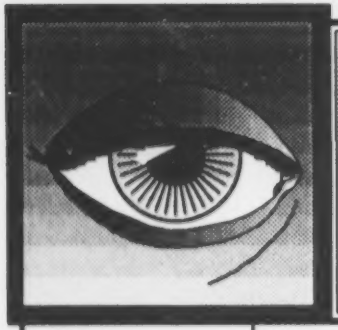
SUBJECT AREA:

SUPPLIES/MATERIALS:

INTELLIGENCE EMPHASIS:

LESSON OBJECTIVE:

ROOM ARRANGEMENT:



LESSON PLANNING IDEAS
Visual/Spatial

HISTORY	MATHEMATICS	LANGUAGE ARTS	SCIENCE & HEALTH	GLOBAL STUDIES & GEOGRAPHY	PRACTICAL ARTS & P.E.	FINE ARTS
Have imaginary talks/interviews with people from the past	Do a survey of students' likes/dislikes then graph the results	Play vocabulary words "Pictionary"	Draw pictures of things seen under a microscope	Draw maps of the world from your visual memory	Draw pictures of how to perform certain physical feats	Watch dancers on video and imagine yourself in their shoes
Make visual diagrams and flow charts of historical facts	Estimate measurements by sight and by touch	Teach "mind-mapping" as a notetaking process ‡	Create posters/flyers showing healthy eating practices	Study a culture through its visual art—painting and sculpture	Create visual diagrams of how to use shop machines	Pretend you can enter a painting—imagine what it's like
Imagine going back in time—see what it was like "back then"	Add, subtract, multiply, and divide using various manipulatives	Draw pictures of the different stages of a story you're reading	Create montages/ collages on science topics (e.g., mammals)	Make maps out of clay and show geographical features	Practice drawing objects from different angles (drafting)	Listen to music with eyes closed and create a sculpture from clay
Paint a mural about a period of history	Imagine using a math process successfully, then really do it	Learn to read, write, and decipher code language	Draw visual patterns that appear in the natural world	Make decor for the classroom on a culture you are studying	Learn a series of "spatial games" (e.g., horseshoes, ring toss)	Draw the sets for the various scenes of a play you are reading
Imagine and draw what you think the future will be like	Learn metric measurement through visual equivalents	Use highlight markers to "colorize" parts of a story or poem	Pretend you are microscopic and can travel in the bloodstream	Use a map to get around an unfamiliar place or location	Imagine your computer is human—draw how it works	Draw the visual and color pattern of a dance

‡ See Glossary and Appendix C

"How Does It Feel To Be a Circle?"

TEACHING WITH

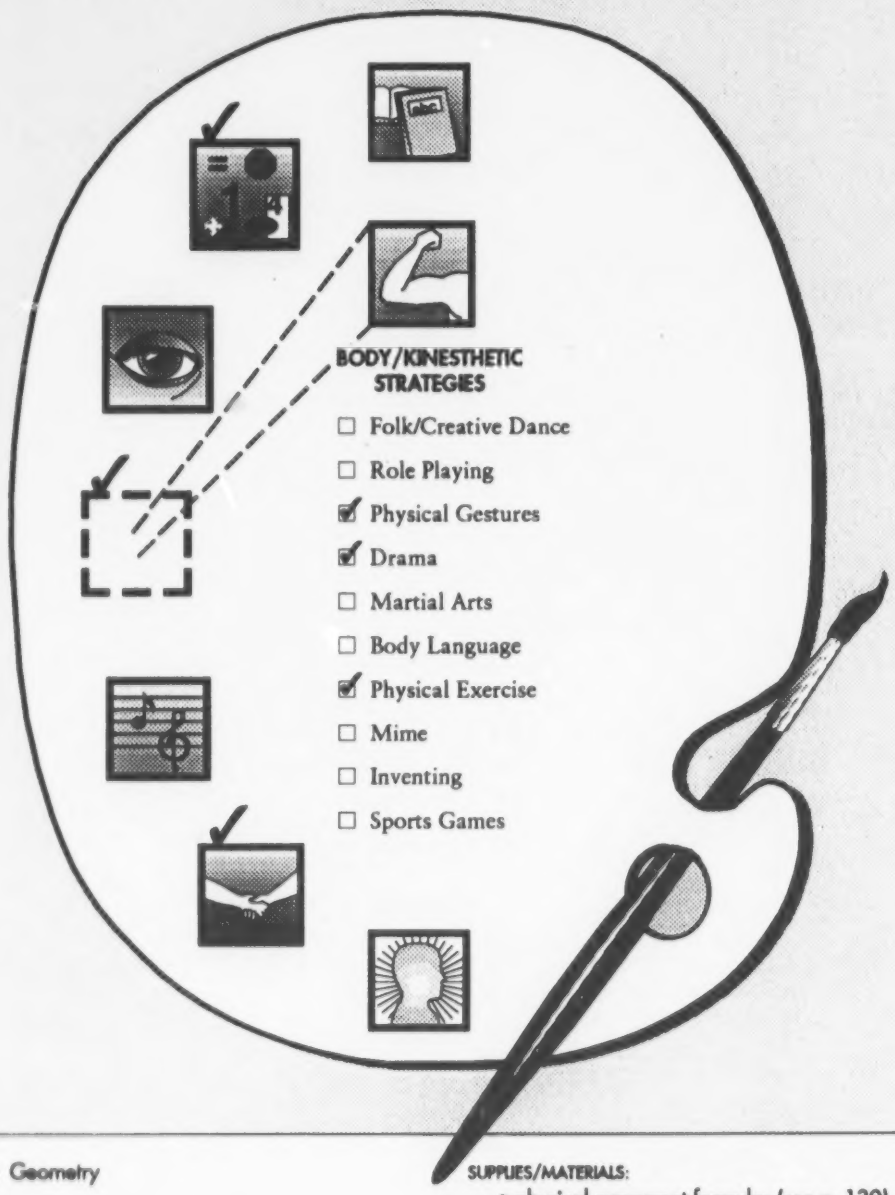
BODY/KINESTHETIC INTELLIGENCE

CHAPTER

4

A Geometry Lesson:
Middle School Level

Lesson Palette: *Body/Kinesthetic* Emphasis



BODY/KINESTHETIC STRATEGIES

- ☐ Folk/Creative Dance
- ☐ Role Playing
- ☑ Physical Gestures
- ☑ Drama
- ☐ Martial Arts
- ☐ Body Language
- ☑ Physical Exercise
- ☐ Mime
- ☐ Inventing
- ☐ Sports Games

SUBJECT AREA: Geometry

INTELLIGENCE EMPHASIS: Body/Kinesthetic

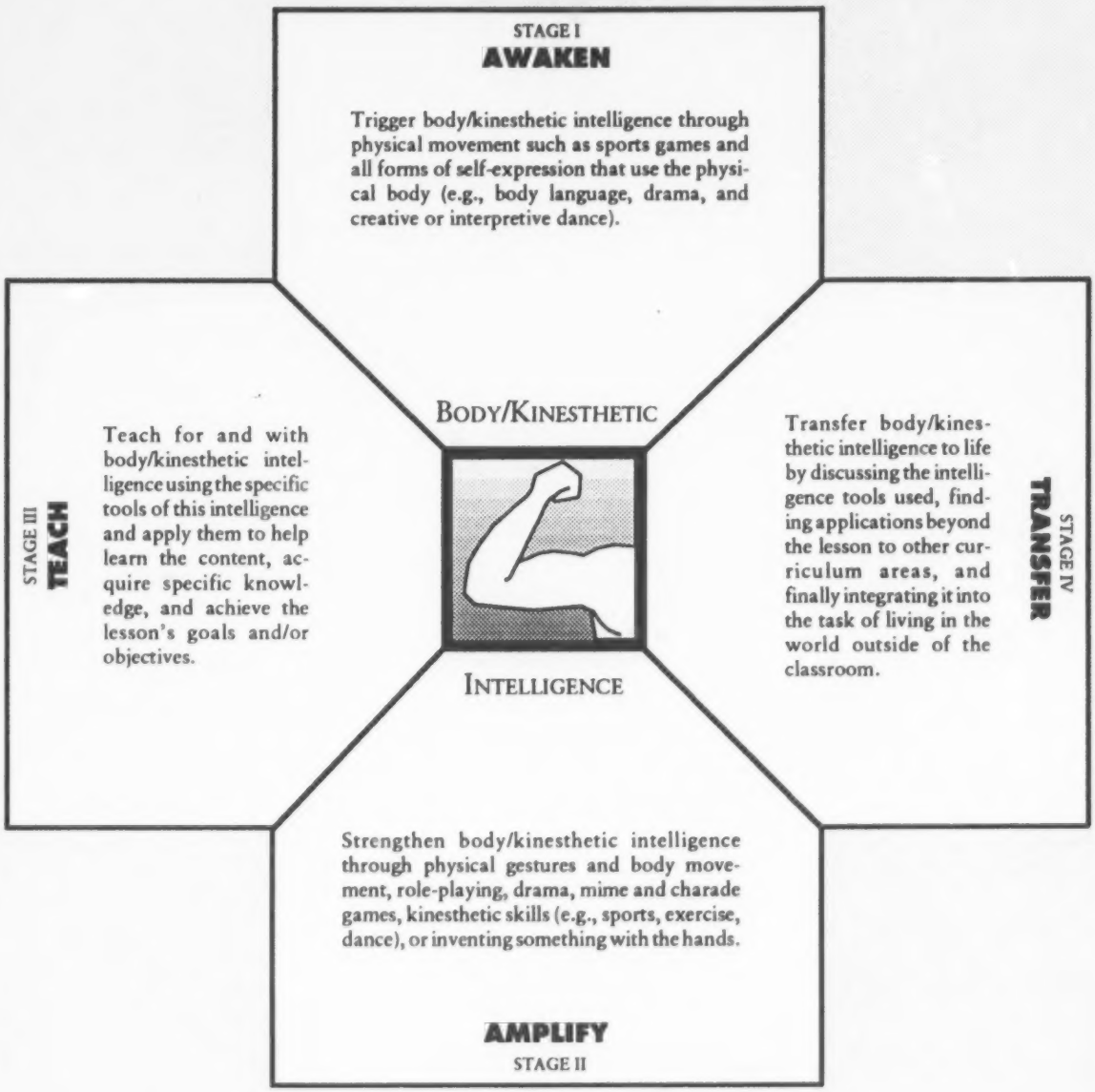
LESSON OBJECTIVE: To learn how to find the circumference of a circle and the area of a rectangle, and how to use and understand the formulas for performing these tasks.

SUPPLIES/MATERIALS:

- physical movement formulas (see p. 130)
- notebook paper
- pen/pencil

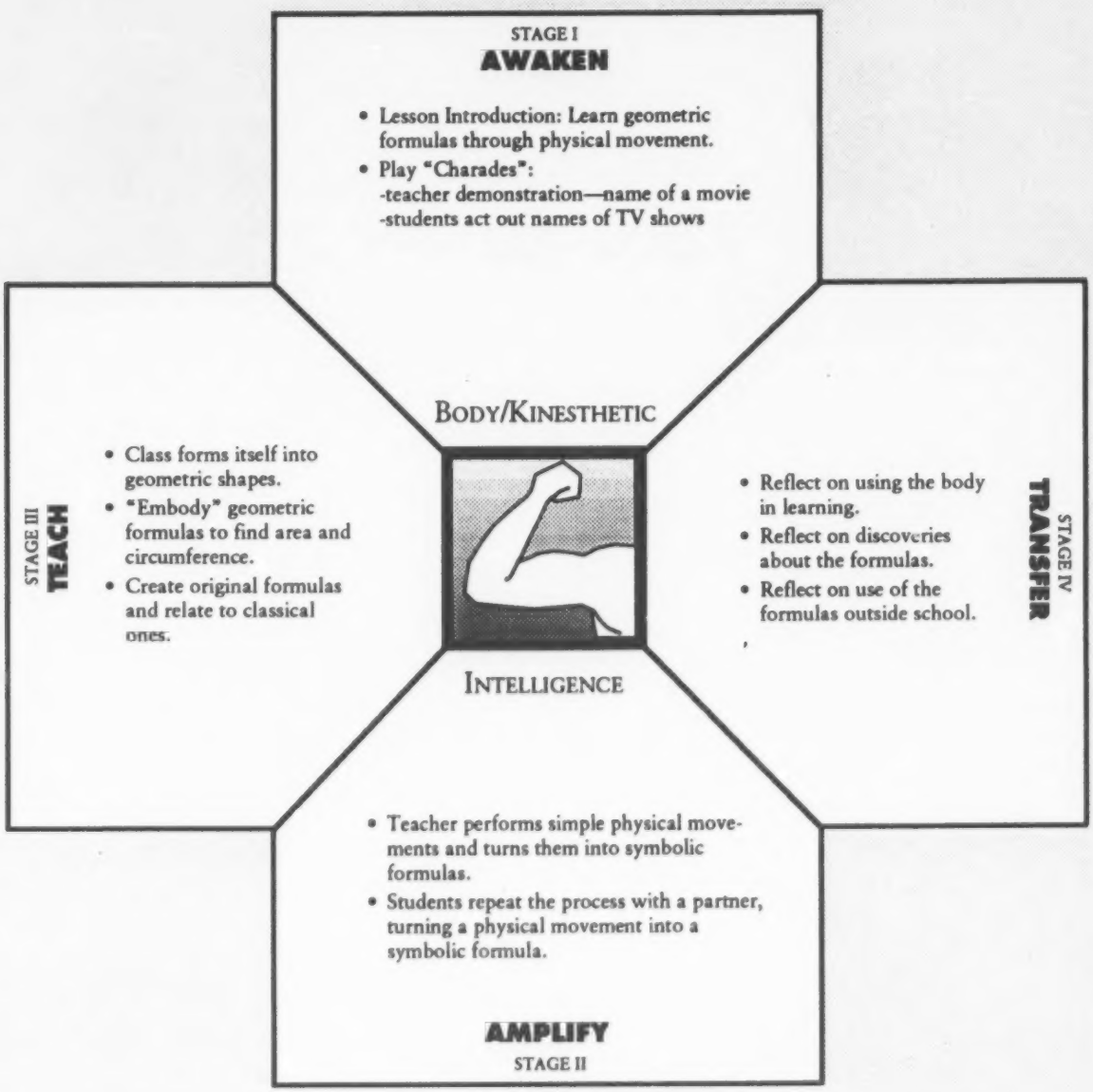
ROOM ARRANGEMENT: Desks against the wall so there is plenty of space for moving around

THE LESSON . . .


STAGE I
AWAKEN
Trigger body/kinesthetic intelligence through physical movement such as sports games and all forms of self-expression that use the physical body (e.g., body language, drama, and creative or interpretive dance).
BODY/KINESTHETIC
INTELLIGENCE
STAGE III
TEACH
Teach for and with body/kinesthetic intelligence using the specific tools of this intelligence and apply them to help learn the content, acquire specific knowledge, and achieve the lesson's goals and/or objectives.
STAGE IV
TRANSFER
Transfer body/kinesthetic intelligence to life by discussing the intelligence tools used, finding applications beyond the lesson to other curriculum areas, and finally integrating it into the task of living in the world outside of the classroom.
Strengthen body/kinesthetic intelligence through physical gestures and body movement, role-playing, drama, mime and charade games, kinesthetic skills (e.g., sports, exercise, dance), or inventing something with the hands.
AMPLIFY
STAGE II

The Model

. . . AT A GLANCE


STAGE I
AWAKEN
• Lesson Introduction: Learn geometric formulas through physical movement.
• Play "Charades":
-teacher demonstration—name of a movie
-students act out names of TV shows
BODY/KINESTHETIC
INTELLIGENCE
STAGE III
TEACH
• Class forms itself into geometric shapes.
• "Embody" geometric formulas to find area and circumference.
• Create original formulas and relate to classical ones.
STAGE IV
TRANSFER
• Reflect on using the body in learning.
• Reflect on discoveries about the formulas.
• Reflect on use of the formulas outside school.
• Teacher performs simple physical movements and turns them into symbolic formulas.
• Students repeat the process with a partner, turning a physical movement into a symbolic formula.
AMPLIFY
STAGE II

The Model *Applied*

"How Does It Feel To
Be A Circle?"

A GEOMETRY LESSON WITH

Body/Kinesthetic Intelligence

Lesson Procedures

INTRODUCTION

☛ Body/kinesthetic capacities involve a set of highly complex brain, mind, and body operations. We know that the right side of the brain controls the motor functions of the left side of the body, and the left side of the brain controls the right side of the body. The cerebral cortex of the brain (see brain diagram, p. xxv) is like a radar system that continually monitors and interprets the meaning of various data all over the body. This information is fed to the cerebral cortex through the spinal cord. Once the cerebral cortex has this information and has processed and interpreted it, the motor cortex "kicks into gear," and produces the bodily movement needed to respond to what the cerebral cortex has discerned. All of this happens in a split second!

In this lesson students will learn two different geometric formulas by physically "em-bodying" them. They will learn the formulas with their bodies, create their own formulas to describe the physical movements they have made, and finally transfer this learning to the classical geometric formulas. Tell the students that this lesson will emphasize body/kinesthetic intelligence as the primary way of knowing. Ask them to be aware of this as they work.

Two other intelligences are also used in this lesson. Logical/mathematical intelligence is involved in that students must recognize patterns, in this case physical movement patterns, and be able to convert these patterns into abstract symbolic formulas. Interpersonal intelligence is involved as students work with a partner to create their formulas.

STAGE I

AWAKEN

☛ The very act of physical movement creates an immense amount of activity in the brain. When you add to this the necessity to communicate in and through that movement, the fullness of the body as a vehicle of expression and/or knowing is activated.

For centuries people have understood that there are things that can be known and expressed physically that cannot be known or expressed in any other way; thus the

Begin by playing "Charades" with the class:

1. Think of a movie that most students have probably seen and the name of a popular song they know.

   Act out clues to the various words in the titles while students guess the movie or song. After they have succeeded in guessing one, act out the other.

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world's rich traditions of drama, creative dance, mime, various cultural festivals, and religious pageantry. When you ask students to act out something, you call all of this potency to the foreground so that you can use it in the rest of the lesson.

2. Now break the class into teams of three. Have the teams play charades with each other by drawing the names of current TV shows from a hat and acting out their titles for each other. Allow three rounds so that each student gets a chance to act out a title.

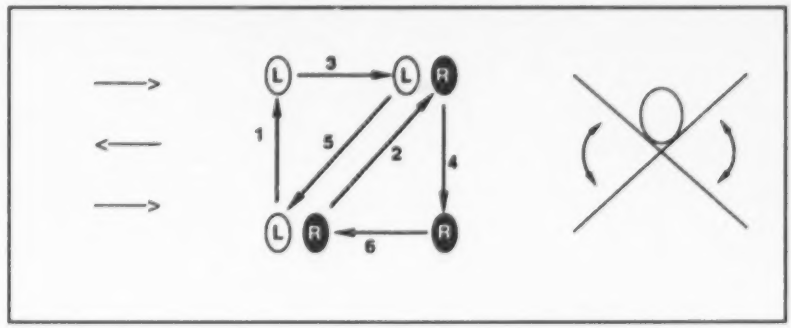
STAGE II

AMPLIFY

☛ It is often easier to understand the need to practice body movement skills than it is to understand the need to practice some of the other intelligences. This is most likely because our culture is very much aware of the training athletes go through in order to compete in sports events. We know that through careful and regular practice we can improve such things as our serve in tennis, our skill in ice skating, and the ability to parallel park. There are many things that our bodies "know" that are not necessarily clear to the mind; for example how to ride a bike, how to type without looking at the keyboard, how to ski, and how to walk without toppling over.

The teacher first models the skill that the students later employ in the lesson. It is important that the modeling be as close as possible to what you are actually going to have them do in the lesson. However, the more "content free" the demonstration is the more students will be able to focus on learning the skill itself without being distracted by other information.

1. Introduce the intelligence skill by putting the following formulas on the board or overhead and see if students can guess what the formulas represent (use the blackline, p. 130).



After they have had a few minutes to guess, tell them they are formulas you have made up to symbolize different kinds of physical movement. Perform the three different movements (#1—walking back and forth across the room, #2—the box step, #3—a jumping jack) and see if they can guess which movement goes with which formula. Help them see the relationship between the various parts of the formula and the movement it represents.

☛ Students need a chance to experience what it is like to learn and know things with the body, especially in the classroom where they are generally asked to "leave their bodies outside!" Here they are given an opportunity to practice creating "physical movement formulas" of their own as you modeled earlier.

2. Working in the same groups of three in which they played charades, have them draw an item out of a hat. This time they will get a physical movement they are to perform as a team and then turn it into a symbolic formula as you have demonstrated above. Remind them that they are learning how to do this in order to use this skill later in the lesson.

[*Suggestions for items in the hat: doing five push ups, moving from your desk to sharpen your pencil and back to your desk, throwing a piece of paper into the trash can, etc.*]

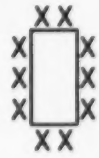
STAGE III

TEACH

☛ This is a process of translating physical movements into symbolic formulas of their own creation, this time to learn geometry concepts. It gives students an opportunity to experience the relationship between their movements and an abstract formula that symbolizes the movement.

1. The first task is to find the area of a rectangle. Have 10 students volunteer to form a rectangle having the width of four students and the length of five students. Give them a rope to stretch around the inside of the rectangle they have formed.

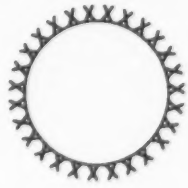
2. Ask the class to guess how many students it will take to fill in the rectangle. Record these estimates on the board/overhead.
3. Now have the students one by one enter the rectangle and fill it in by rows until it looks like this:



4. Count the number of students inside of the rope boundary and compare this with the estimates made earlier.

☛ Once they have learned a movement with their bodies and have created a symbolic formula for that movement, often the formula alone can trigger the body-knowing of the movement and, in turn, the meaning of the formula. This happens because the pattern has been encoded in the brain through the physical activity. An example of this can be seen when Olympic athletes use imagination exercises to improve the performance of their sport, or when children learn social roles through creative play.

5. Have students now return to their seats and with a partner create a symbolic formula that describes what they have just experienced: how many people it takes to fill in a rectangle that is four students wide by five students long.
6. Now have the entire class form itself into a circle. Have the class guess how many steps it will take to get around the outside of the circle.



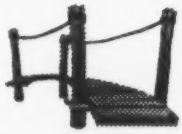
7. Choose five different students to walk the circumference of the circle, one at a time, counting the number of steps they take. Record their numbers on the board/overhead.

8. Ask the students if they have any ideas on other ways to figure out how many steps it takes to to get around the circle. Now have the same students walk the diameter of the circle, counting the number of steps they take. Again record the numbers.

9. Now ask the class to notice the relationship between the number of steps it takes to get around the circle compared to the number to get across it. What do you notice? Approximately how many times across would equal one time around?
10. Again have students return to their seats with a partner. Together they are to create a symbolic formula to explain what they have just experienced.
11. Now write the classical formulas for finding the area of a rectangle and for finding the circumference of a circle on the board and explain the formulas to the students: $A = l \times w$ and $C = \pi d$
12. With their partner, have them compare the formula they wrote to the formula on the board. Listen carefully as they talk and help them understand the relationship between their formula and experience, and the classical geometric formula for these things.

☛ This comparison helps students bridge the formulas from the textbook into their own experience, for they have actually "embodied" the formulas!

STAGE IV



TRANSFER

☛ The goal of the transfer part of the lesson is to help students take what they have learned in the lesson and apply it in other areas of their school work and in their everyday lives outside of the formal school situation. The reflection on using the body to help learn information increases students' awareness of their own body/kinesthetic intelligence and how to make it work better for them.

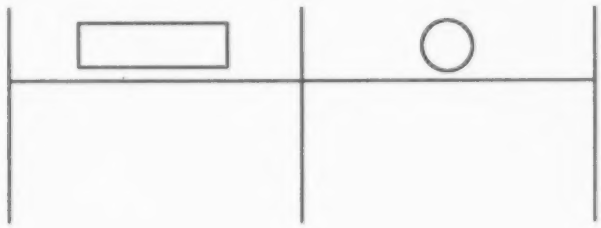
Reflect on the lesson with the students in the following manner:

1. Discuss what it was like to use the body to learn. Ask questions like the following:
   - Which of the two formulas was easiest to understand with your body? Why?
   - Which was most difficult? Why?

- How did using your body help you understand the formulas?
- What ideas do you have about other ways you could use your body to help you with your learning (in both mathematics and other subjects)?

☛ This reflection on the formulas helps students see that they have gained something they can use in their lives outside of the classroom situation. Education research clearly shows that if the "payoff" of a lesson is immediate, the motivation for learning will dramatically increase.

2. Create columns for the rectangle and for the circle.



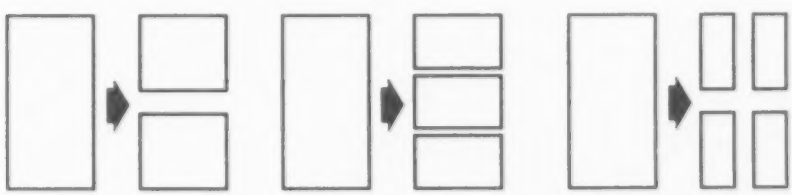
Now brainstorm with the class when in their everyday lives these formulas might come in handy; for example:

- Will a 14" diameter pizza feed the number of people at your table? (How many inches of pizza will each get?)
- How many 2" x 3" photos would fit on an 8 1/2" x 11" page?

A "SPIRAL" ADAPTATION OF THE LESSON

For Elementary Levels

1. Focus the lesson on learning to divide wholes into parts and on understanding the meaning of simple fractions.
2. Learn the meaning of one half, one third, and one fourth by tearing paper and then drawing pictures of the results; for example:



3. Have the students stand as a group, then divide themselves in half, into thirds, and then into fourths when you hold up signs with pictures from above. Help them transfer these pictures to the fraction symbols that mean the same thing, namely:

1/2 **1/3** **1/4**

For Secondary Levels

1. Focus the lesson on learning the paper-and-pencil math process for finding unknown quantities in algebraic equations.
2. Practice "em-bodying" written math operations in physical movements; for example, physically demonstrate answers to various math problems such as

$$10 + 5 = ? \quad \text{or} \quad \frac{(3+1)}{2} \times 2 = ?$$

3. Have students physically become different equations and find the unknown quantities with their bodies; for example,

$$\frac{(2 + x)}{2} = 4$$

4. Have them relate their discoveries to math operations they know can produce the same results.

ASSESSMENT TIPS

FOR THEIR PORTFOLIOS

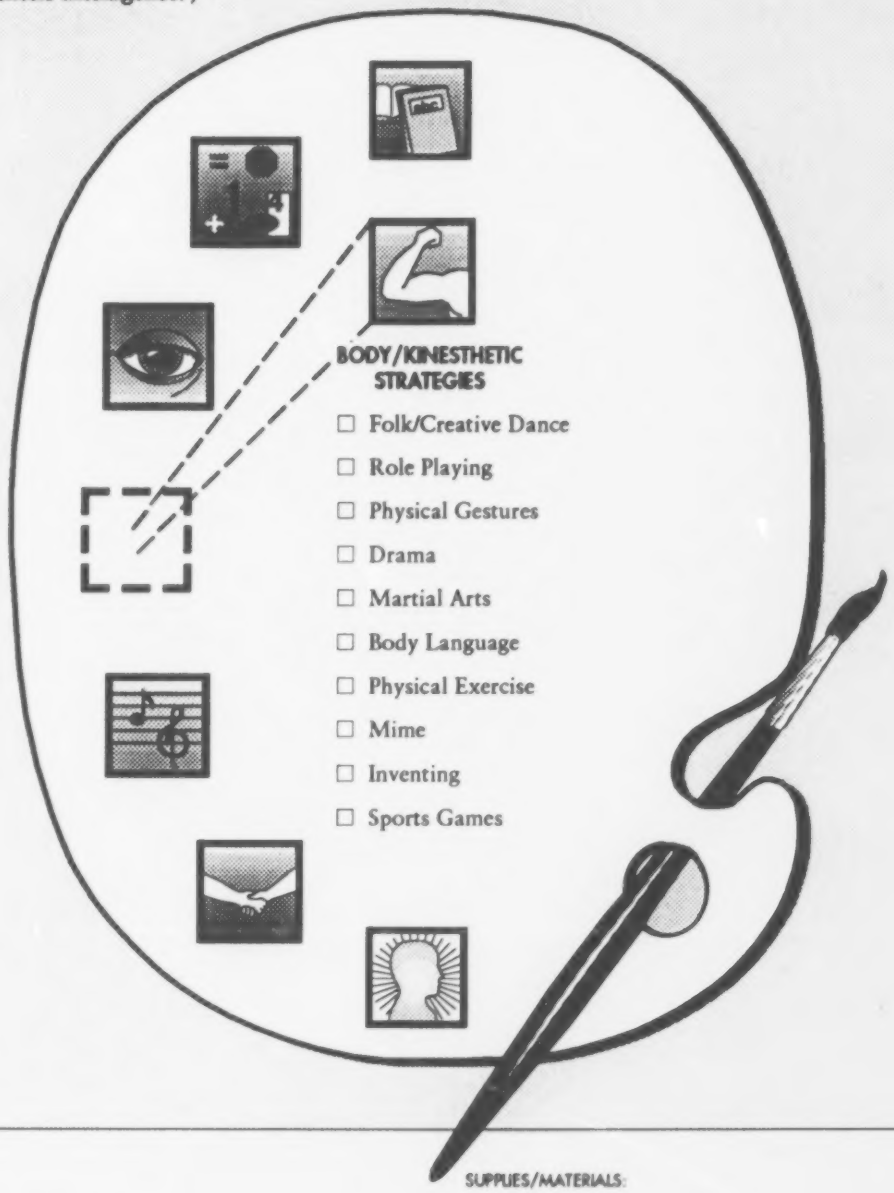
1. Have them include the symbolic formulas they created with their partner.
2. Have them write an explanation of their original formulas in light of the classical ones.

FOR THEIR JOURNALS

1. Have them do a PMI (see glossary, p. 149 and blackline, p. 144) on using the body in learning.
2. Have them include individual brainstorm notes on how the formulas can be useful in life outside the classroom.

Look to the Past . . .

(Rethink a lesson you have completed recently. How would you restructure it to teach FOR and WITH Body/Kinesthetic Intelligence?)



BODY/KINESTHETIC STRATEGIES

- ☐ Folk/Creative Dance
- ☐ Role Playing
- ☐ Physical Gestures
- ☐ Drama
- ☐ Martial Arts
- ☐ Body Language
- ☐ Physical Exercise
- ☐ Mime
- ☐ Inventing
- ☐ Sports Games

SUBJECT AREA:

SUPPLIES/MATERIALS:

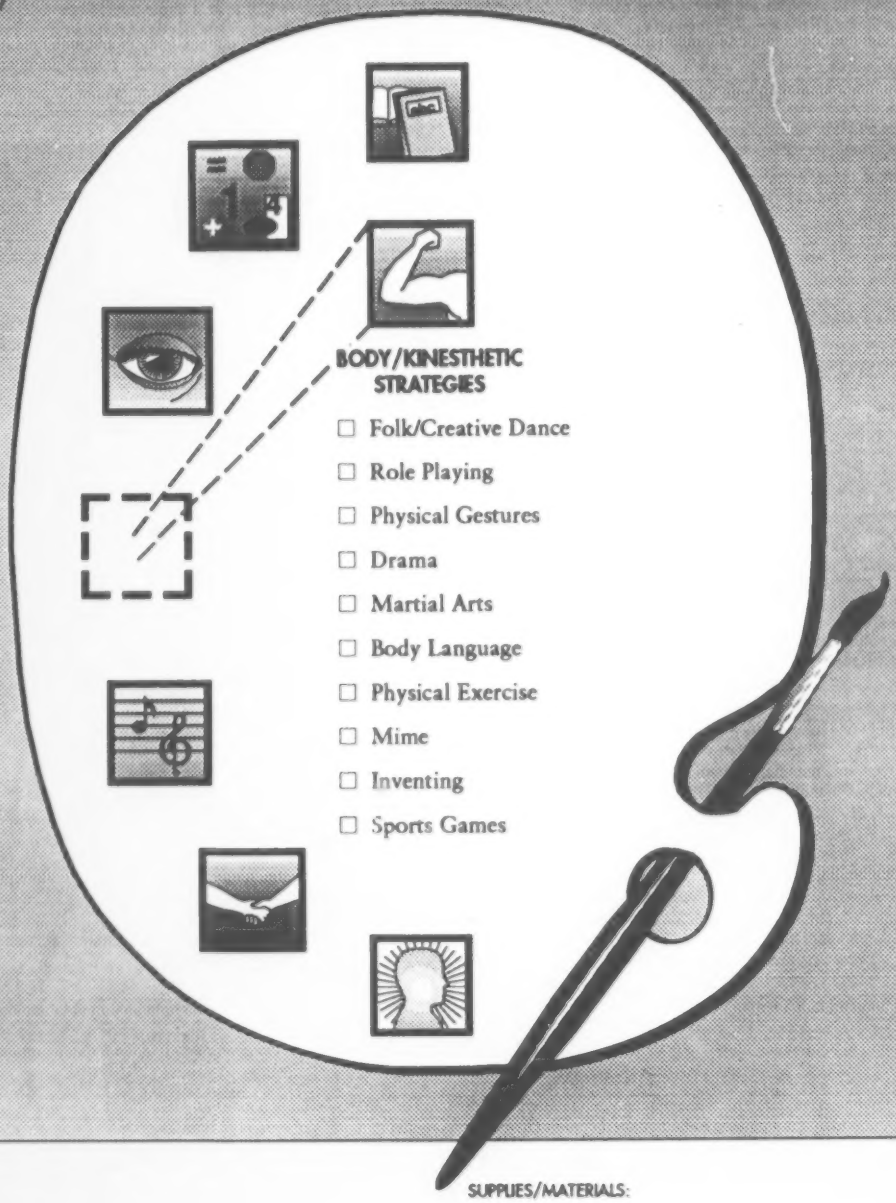
INTELLIGENCE EMPHASIS:

LESSON OBJECTIVE:

ROOM ARRANGEMENT:

Look to the Future . . .

(Think about an upcoming lesson. How would you structure it to teach FOR and WITH Body/Kinesthetic Intelligence?)



BODY/KINESTHETIC STRATEGIES

- ☐ Folk/Creative Dance
- ☐ Role Playing
- ☐ Physical Gestures
- ☐ Drama
- ☐ Martial Arts
- ☐ Body Language
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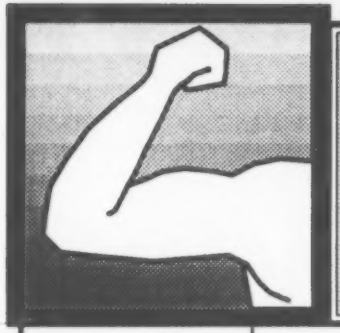
SUBJECT AREA:

SUPPLIES/MATERIALS:

INTELLIGENCE EMPHASIS:

LESSON OBJECTIVE:

ROOM ARRANGEMENT:



Lesson Planning Ideas

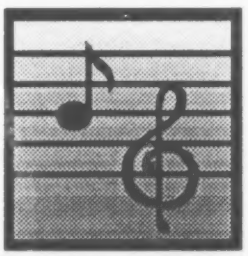
Body/Kinesthetic

HISTORY	MATHEMATICS	LANGUAGE ARTS	SCIENCE & HEALTH	GLOBAL STUDIES & GEOGRAPHY	PRACTICAL ARTS & P.E.	FINE ARTS
Perform and/or create dramas from a period of history	Use different parts of the body to measure things	Play "The Parts of a Sentence" charades	Role play the parts and dynamics of the life of a cell	Learn folk dances of a culture being studied	Learn and perfect various "multi-tracking" routines †	Create the dance equivalent for different inventions
Re-enact great scenes or moments from history for today	Add and subtract members to and from a group to learn about fractions	"Embody" (act out) the meaning of vocabulary words	Create the rotation of planets with the class as the solar system	Create gestures to represent the legend of a map	Invent something in shop classes— (e.g., a new household tool)	Create "human sculpture tableaux" to express an idea †
Hold an historical period, costume, and food day	Design something that requires applying math concepts	Act out a story or play that you are studying	Become and act out the different states of matter	Play "physical movement games" from another culture	Practice physical movements in your mind then with your body	Make up gestures for parts of a musical score
Play "Great Moments from the Past" charades	Create and act out a play in which the characters are geometric shapes	Learn the alphabet by body movements and physical gestures	Conduct a series of "hands-on" scientific experiements	Simulate "going shopping" using currency from another country	Make up a new kind of snack food, prepare it, and eat it	Design a "live painting" of a classical work †
Learn dances from previous periods of history (e.g., minuet)	Make up a playground game that uses math concepts/operations	Make up a "Parts of Speech" folk dance	Study and try various "biofeedback" techniques/methods †	Study "body language" from different cultural situations	Create and perform a drama on how a computer operates	Practice doing impromptu dramatic mime activities

† See Glossary

"The Past Is Alive with the Sound of Music"

TEACHING WITH



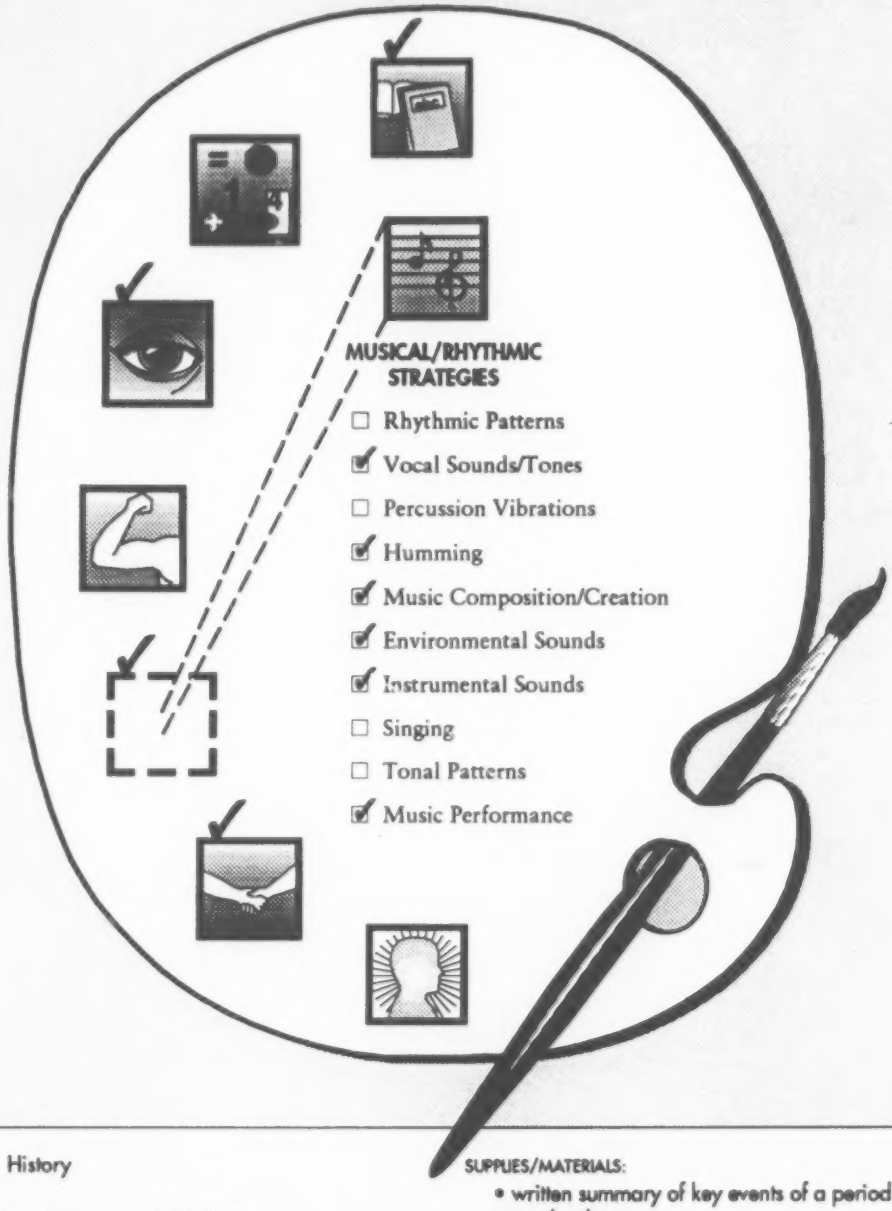
MUSICAL/RHYTHMIC INTELLIGENCE

CHAPTER

5

A History Lesson:
Elementary School Level

Lesson Palette: *Musical/Rhythmic* Emphasis



SUBJECT AREA: History

INTELLIGENCE EMPHASIS: Musical/Rhythmic

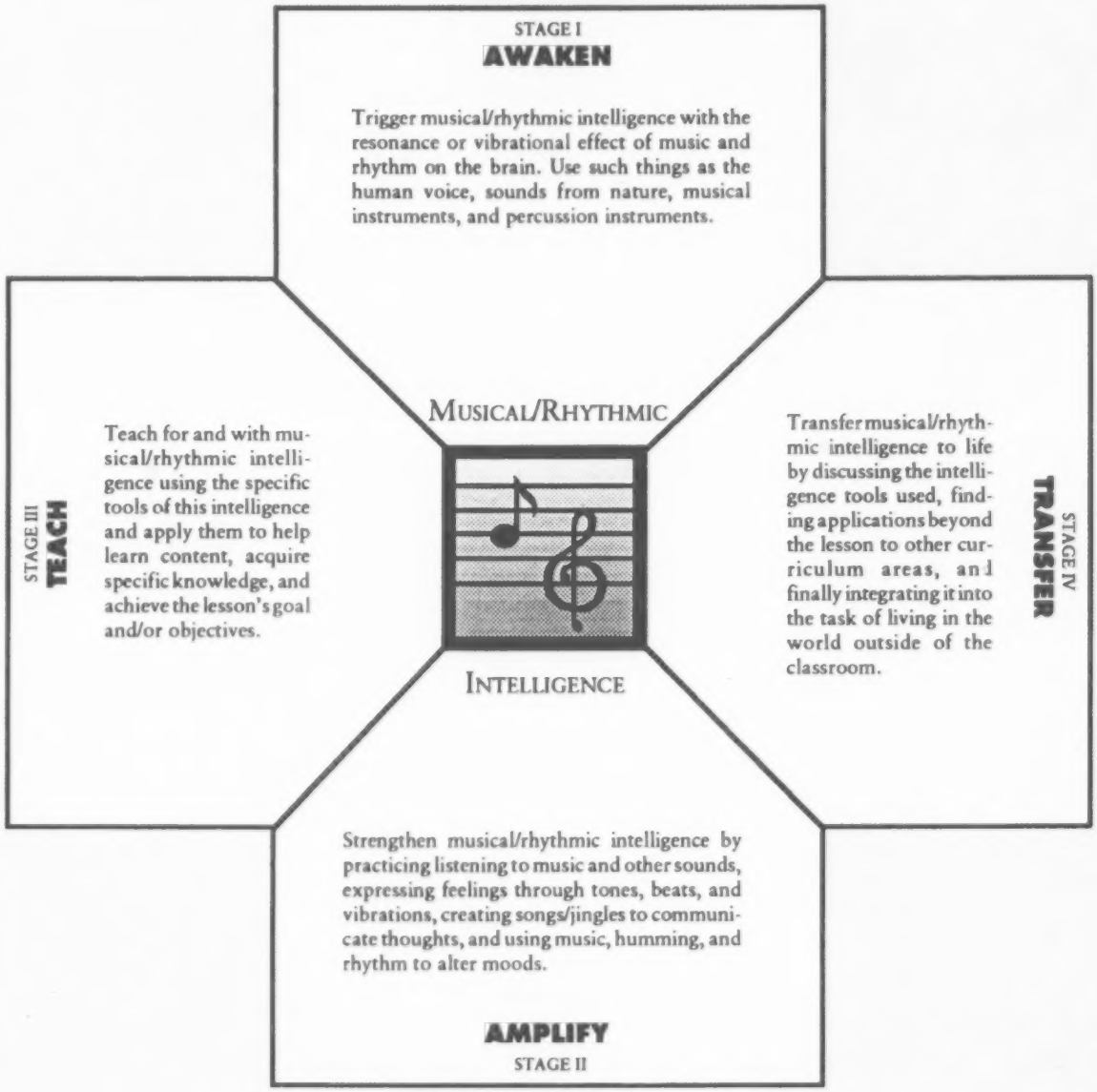
LESSON OBJECTIVE: To grasp an historical period as an unfolding, dramatic story that has a number of messages and much relevancy for our current world situation.

SUPPLIES/MATERIALS:

- written summary of key events of a period of history
- notebook paper
- pen/pencil
- a variety of instruments (drums, noise makers, etc.)

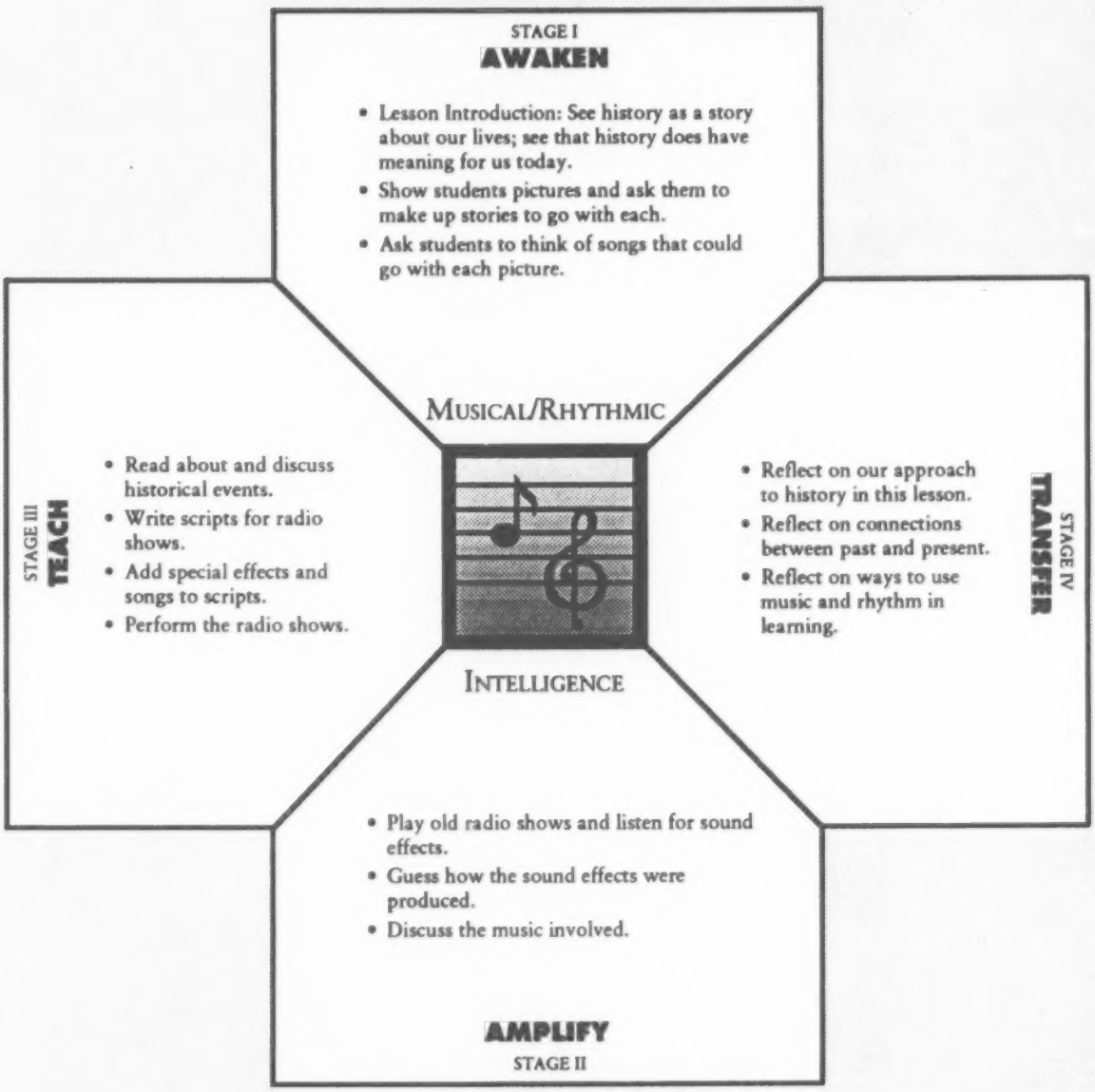
ROOM ARRANGEMENT: Desks arranged in groups of five around the room with the center of the room as the stage (like theatre in the round)

THE LESSON . . .

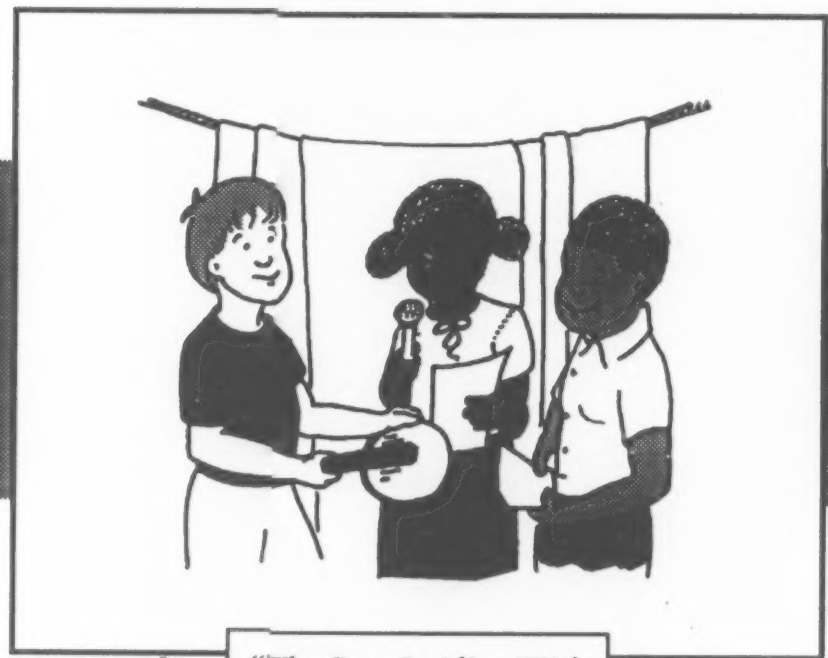

STAGE I
AWAKEN
Trigger musical/rhythmic intelligence with the resonance or vibrational effect of music and rhythm on the brain. Use such things as the human voice, sounds from nature, musical instruments, and percussion instruments.
STAGE III
TEACH
Teach for and with musical/rhythmic intelligence using the specific tools of this intelligence and apply them to help learn content, acquire specific knowledge, and achieve the lesson's goal and/or objectives.
MUSICAL/RHYTHMIC
INTELLIGENCE
STAGE IV
TRANSFER
Transfer musical/rhythmic intelligence to life by discussing the intelligence tools used, finding applications beyond the lesson to other curriculum areas, and finally integrating it into the task of living in the world outside of the classroom.
Strengthen musical/rhythmic intelligence by practicing listening to music and other sounds, expressing feelings through tones, beats, and vibrations, creating songs/jingles to communicate thoughts, and using music, humming, and rhythm to alter moods.
AMPLIFY
STAGE II

The Model

. . . AT A GLANCE

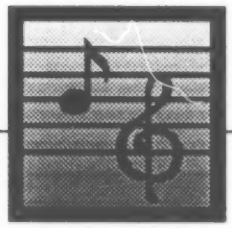

STAGE I
AWAKEN
• Lesson Introduction: See history as a story about our lives; see that history does have meaning for us today.
• Show students pictures and ask them to make up stories to go with each.
• Ask students to think of songs that could go with each picture.
MUSICAL/RHYTHMIC
INTELLIGENCE
STAGE III
TEACH
• Read about and discuss historical events.
• Write scripts for radio shows.
• Add special effects and songs to scripts.
• Perform the radio shows.
STAGE IV
TRANSFER
• Reflect on our approach to history in this lesson.
• Reflect on connections between past and present.
• Reflect on ways to use music and rhythm in learning.
• Play old radio shows and listen for sound effects.
• Guess how the sound effects were produced.
• Discuss the music involved.
AMPLIFY
STAGE II

The Model *Applied*



"The Past Is Alive With
The Sound Of Music"

A HISTORY LESSON WITH



Musical/Rhythmic Intelligence

Lesson Procedures

INTRODUCTION

History is a story about our lives—where we've come from and where we are going. In this lesson students will illustrate an event from the past with sound, music, and rhythmic patterns. First, they will learn about something that happened in American history, either by reading a short article or by hearing a teacher lecture. Then, in cooperative groups, they will create songs and sound effects for re-telling the story as if it were an old-time radio show. Tell the students that this lesson will emphasize the musical/rhythmic way of knowing. Ask them to be aware of this as they work on the lesson.

In addition to the musical/rhythmic emphasis of this lesson, verbal/linguistic, visual/spatial, and interpersonal intelligences are involved. Verbal/linguistic intelligence tools are employed at several points: reading about an historical event, answering questions, and writing about it. Interpersonal intelligence is involved in working with a team. Visual/spatial intelligence is accessed through using pictures, both in the opening exercise and in the pictures of historical scenes.

☛ In some ways the consciousness-altering effect of musical/rhythmic intelligence is greater than any of the other intelligences, precisely because of the impact of music on the state of the brain. Music, rhythm, and sound possess tremendous evocative power in our lives. Just think about how music and rhythm can can calm you when you are stressed, stimulate you when you are bored, inspire your religious beliefs, national loyalty, feelings for a beloved, and help you express experiences of great loss or intense joy. Also consider how effectively music is used in all forms of TV and radio advertising! Both the left and right hemispheres of the brain are involved in musical/rhythmic intelligence. The left hemisphere is involved in the formal, systematic approach to music and rhythm; for example when we are learning to read notes, beat out a prescribed rhythm, and recognize different tones and/or instruments. The right hemisphere is the place of the sheer enjoyment of music for its own sake, whether or not we know anything about it as a formal system.

STAGE I

AWAKEN

☛ Musical/rhythmic intelligence is activated by the resonance or vibrational effect of music, rhythm, and sound on the brain. As students make music and other

1. Begin by showing students a series of pictures from a magazine. Ask volunteers to tell what they think is happening in the pictures. (Try for a variety of pictures, such as people relaxing on a

sounds as the accompaniment for various pictures and stories, the effect of these sounds activates the musical centers of the brain (both left and right) and, with it, an immensely creative way of knowing.

Remember that the more sound(s) you can get the students to make the greater will be the effect on the brain, for it is vibrational impact on the brain that catalyzes this way of knowing. As students are given permission to express themselves and their feelings through sound (beyond the traditional speaking of words), many of them will be opened to realms of knowing and understanding that transcend verbal expression.

beach, people involved in an argument, a family eating dinner, etc.)

2. Ask the class, "What if these scences were on TV but something was wrong and you couldn't see the pictures. How would you be able to figure out what was happening?" Make a list on the board or overhead of such things as the dialogue, the music being played, sounds effects, etc.
3. Now have them think of a kind of music that might be played for each picture which would help someone know what was happening. Have the class hum or sing it.
4. Ask them to think of sounds and noises that would be necessary to help someone know what was happening if they couldn't see the picture. Have the class again make some of the sounds.

STAGE II

AMPLIFY

☛ Enhancing musical/rhythmic intelligence has nothing to do with what is usually referred to as "musical talent." It is rather knowing how to use music and rhythm to put ourselves into optimal states for dealing creatively with different situations. Likewise, we can learn to sense different moods, paces, themes, and ideas that are embedded in a piece of music or a rhythmic pattern which are inexpressible in words!

1. Give a short lecture on the old days of radio, before TV. Remind students that all people had was a radio, so when a story was being told the story-tellers had to use special sounds, music, conversation between people, and different noises to help the listening audience understand the story. For example, they would often use wooden blocks to make a sound like a horse running, or they'd have a bag of broken glass they would rattle if they wanted you to think that a window had been broken.

☛ In the listening, you are trying to draw them in to a new experience; namely, a world where there was no TV. You help them catalyze their active imagination as they listen to the radio shows. By beginning with a short lecture you sensitize them to, and intrigue them with, the possibilities of communication by sound alone.

2. Play several examples of different kinds of old radio shows so they get a sense of what this was like.

   [*Suggestion: try something like the Lone Ranger, Fibber McGee and Molly, and The Shadow (or some other suspense or detective show). Make sure the segments you play illustrate the importance of sound and music in these productions!*]

☛ By having them try to figure out what was done on the radio shows to actually produce the various background sounds, you are preparing them to come up with creative ideas for illustrating their own radio shows with sound and music in the next part of the lesson.

3. Ask the students the following:
   - How do you think the radio programs produced the different sounds?
   - How did the music help the story?

STAGE III

TEACH

☛ The discussion questions help the teams rehearse the basic information in the paragraphs about the pictures. By asking them to record their team's answers to the question you are promoting discussion and whole-team understanding of the picture and paragraph. At the same time this accesses verbal/linguistic intelligence capacities.

1. Now divide the students into cooperative groups with four members in each group. For a "musical" way to break into groups, have everyone pull a song out of a hat. Then have the students start humming their songs and find their groups by identifying the students who are humming their song. Assign the roles of reader, encourager, recorder, and group organizer.

2. Pass out pictures you have prepared ahead of time that depict important events from the early days of American history (one picture per team); for example, Columbus landing on the shores of the New World, the signing of the Declaration of Independence, Abraham Lincoln at Gettysburg, etc. On the back of each picture have one or two paragraphs that explain what is happening in the picture along with two or three discussion questions (see p. 126 for an example).

☛ The "script-writing" assignment is also a comprehension exercise and further utilizes verbal/linguistic intelligence capacities. When students move into the task of creating a song and/or finding a musical piece that will set up and conclude the radio show and illustrating their script with sound, they have moved to the heart of musical/rhythmic intelligence. In these tasks you are helping them to move beyond mere "head knowledge" of their event to a "gut-level" emotional understanding of what is going on.

3. Assign teams to look at their pictures while the reader reads the paragraph on the back. After reading the paragraph, the group organizer is to ask the discussion questions while the recorder writes down the team's answers.

4. Ask the students to recall the radio shows they listened to earlier. Tell them they are to create a radio show about their picture and the story it tells. Each team will perform its program for the class just like the old radio shows.

5. In order to get ready for the show, each team will need to:
   a. Write a simple script that tells the story of the picture and involves all members of the team with a speaking part.
   b. Create a song about the event and/or find a piece of music to start off and end the show. They can either make up the music themselves or find recorded music to play, or a combination of both!
   c. Decide on at least five special sound effects to be used during the show to help the audience understand what is happening.

   [*Note: You will have to monitor the groups very closely to make sure they don't get stuck. You may have to become more actively involved with some groups than others. Also, this project could extend over several days with teams working on one part of the assignment each day.*]

☛ As students perform their radio shows for each other, they help their fellow students know and learn using musical/rhythmic intelligence. The fact that the performing team cannot be seen by their classmates further activates and calls to the fore the fullness of musical/rhythmic intelligence, both in the performing team and in the listening class!

6. When they are ready, have the teams perform their show from another room using an amplification system to "transmit" the program to the main classroom (if possible). If you can't do this, have them perform their shows from behind a screen so they are hidden from view and must rely only on sound to communicate

their story. If you can, tape record each show so they can listen to it later.

☛ You may have to do some re-teaching and/or clarifying at this point. Have the team that presented the program help you with any teaching that is needed so the whole class understands the event.

7. After each team has completed its show, thank them for their work and ask the class some questions to check their understanding of the event that was portrayed.

STAGE IV

TRANSFER

☛ The goal of the transfer part of the lesson is to help students take what they have learned in the lesson and apply it in other areas of their school work and in their everyday lives outside of the school situation.

Reflect on the lesson with the students in the following manner:

1. Ask the whole class to reflect on the radio programs:
   - What do you remember from these different radio programs?
   - What sounds are still ringing in your ears?
   - What lines of dialogue do you remember?
   - What music stands out for you?
2. Pass out the team reflection log to each individual (see example, p. 127). Post the name of the different shows on the board or overhead and have the teams write them in the appropriate columns.

   For each show have the teams discuss the following questions and have each individual write down thoughts from the team:
   - What was the story being told? Can you remember its parts?
   - How did it make you feel?
   - What are your questions about this event?
   - Why is this story important for us today?

☛ You are asking them to synthesize the key learnings/implications from the lesson in terms of its relevance for today. This is a key element in building bridges between the past, the present, and the future, (and, after all, is what makes history worth studying in school in the first place).

A "SPIRAL" ADAPTATION OF THE LESSON

For Middle School Levels

1. Practice turning relatively simple information into songs and/or rap; for example, parts of speech, multiplication tables, states, and capitals.
2. Have students read the material from their history textbook, then retell the story in their own words, illustrating it with songs/rap.
3. After creating several songs about history, turn them into a Broadway musical.

For Secondary Levels

1. Focus the lesson on learning about the mood, feel, and temperament of a part of history through music, rhythm, and sound.
2. Learn to recognize patterns in music and rhythm that communicate such things as emotion, actions, and moods, as well as patterns that can evoke certain feelings in people.
3. Gather a series of examples of music from a period of history you've been studying; for example, Gregorian chant, madrigal, minuet, waltz, cantata, etc. Listen to the music and try to describe what this period must have been like based on its music. Then say what today's music says about us! Compare your impressions with textbook descriptions.

ASSESSMENT TIPS

FOR THEIR PORTFOLIOS

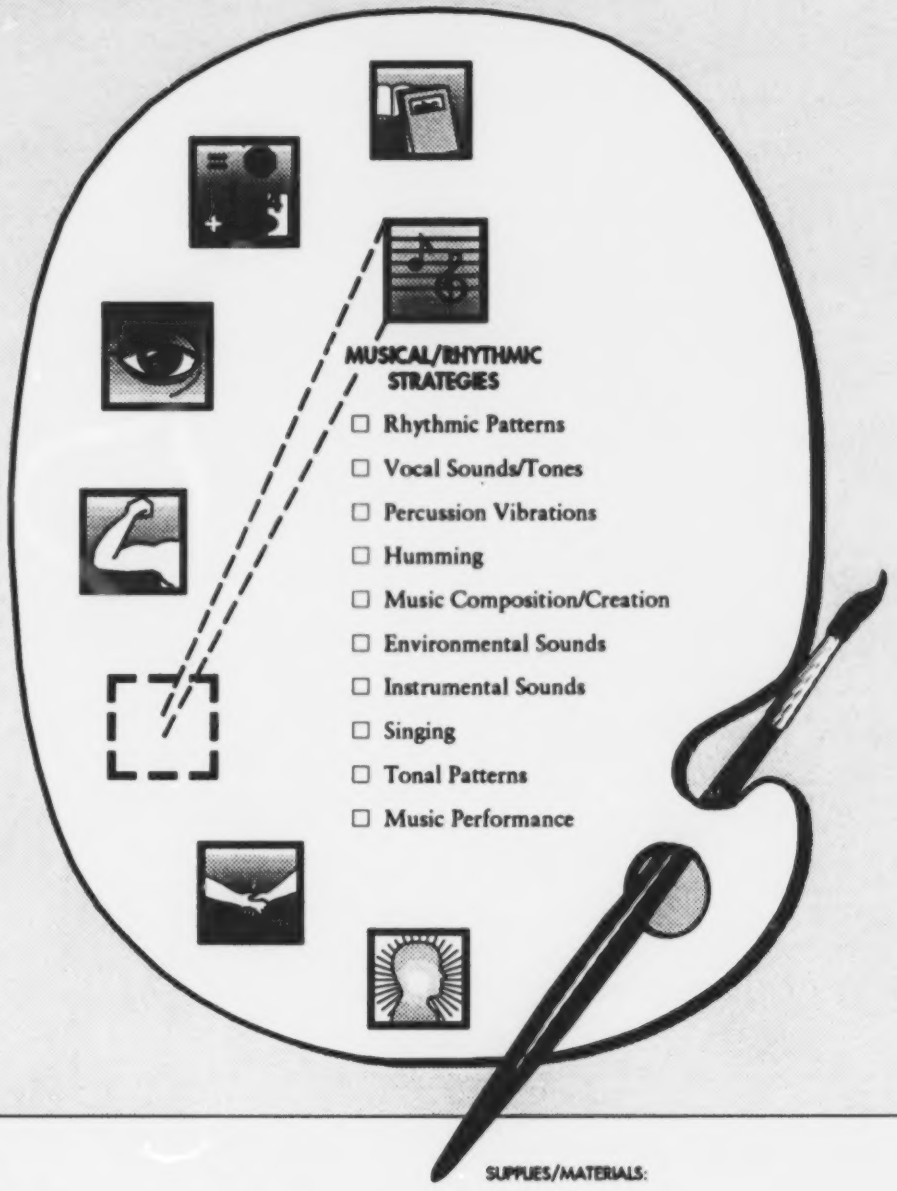
1. Have them include a copy of the script their teams wrote for the radio show.
2. Have them include a copy of the team's answers to the questions about their picture.

FOR THEIR JOURNALS

1. Have them include the team reflection log chart about the different radio shows.
2. Have them write a brief log entry on what they liked/didn't like about the lesson.

Look to the Past . . .

(Rethink a lesson you have completed recently. How would you restructure it to teach FOR and WITH Musical/Rhythmic Intelligence?)



SUBJECT AREA:

SUPPLIES/MATERIALS:

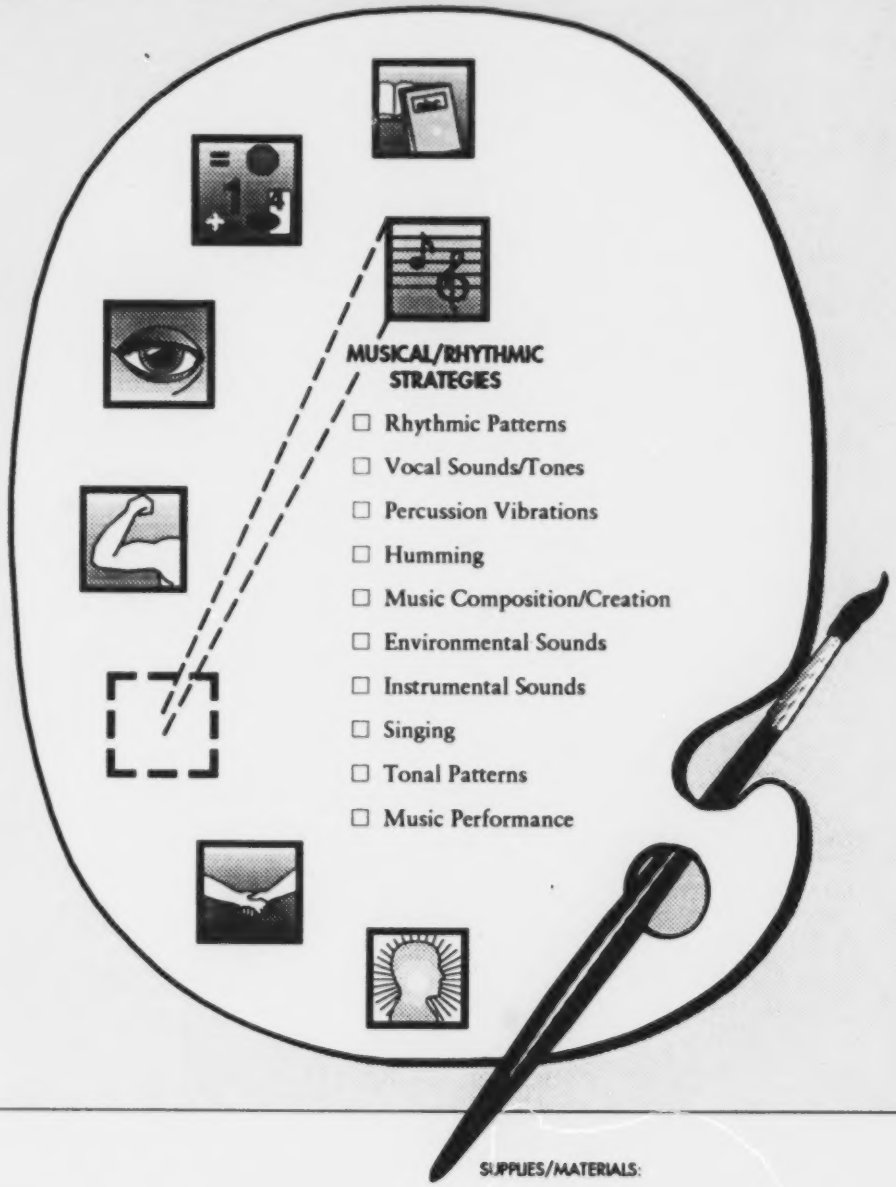
INTELLIGENCE EMPHASIS:

LESSON OBJECTIVE:

ROOM ARRANGEMENT:

Look to the Future . . .

(Think about a lesson you have coming up in the near future. How would you structure it to teach FOR and WITH Musical/Rhythmic Intelligence?)



SUBJECT AREA:

INTELLIGENCE EMPHASIS:

LESSON OBJECTIVE:

SUPPLIES/MATERIALS:

ROOM ARRANGEMENT:

LESSON PLANNING IDEAS

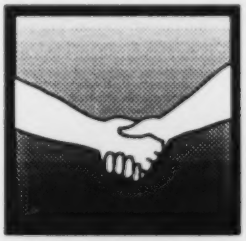
Musical/Rhythmic

HISTORY	MATHEMATICS	LANGUAGE ARTS	SCIENCE & HEALTH	GLOBAL STUDIES & GEOGRAPHY	PRACTICAL ARTS & P.E.	FINE ARTS
Analyze different historical periods through their music	Learn mathematical operations through songs and jingles	Learn Morse Code and practice communicating with it	Learn to use music to reduce stress	Listen to music from different cultures	Perform physical exercise routines in sync with music	Play "Guess the Rhythm/Instrument" of musical pieces
Create a series of key dates in history "raps"	Learn addition and subtraction through drum beats	Use different kinds of music for different kinds of writing	Listen to sounds of things in the natural world	Play musical instruments from around the world	Learn to recognize shop machines through their sounds	Draw/paint a piece of music as it plays
Make musical instruments from the past and compose a piece	Play the "Rhythm Game" to learn times tables †	Learn and practice "phonetic punctuation" (a lá Victor Borge)	Experiment with the effect of vibration on sand in a metal plate	Create a sound/tonal-based legend for a map	Record and recognize the varying sounds of a computer operating	Turn a non-musical play into a musical
Teach songs that were sung in previous eras (e.g., Gregorian chant)	Break a set of tones into various groups to learn division tables	Create songs/rap to teach grammar and syntax	Try various humming patterns to see how they change mood	Learn characteristic rhythm patterns of different cultures	Experiment with the effect of different kinds of music on how you eat	Practice impromptu music composition
Watch films about the past and focus on the sounds of history	Make up sounds for different math operations and processes	Illustrate a story/poem with appropriate sounds	Assign sounds to systems you are studying such as the nervous system, circulatory system, etc.	Sing songs from nations/countries being studied	Use music to help improve keyboarding skills and speed	Make up a creative/interpretive dance to a piece of music

† See Glossary

"Forming a Personal Advisory Council"

TEACHING WITH

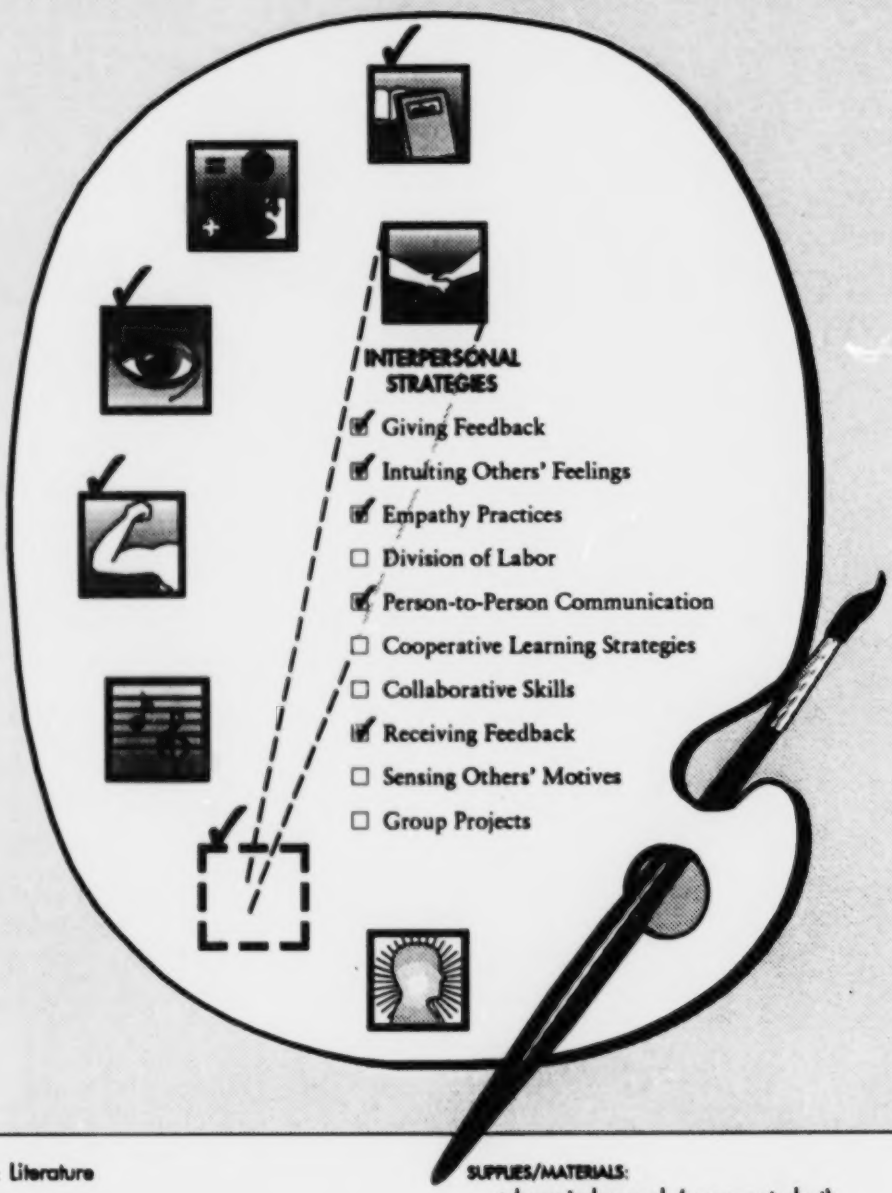


INTERPERSONAL INTELLIGENCE

CHAPTER 6

A Literature Lesson:
Middle School Level

Lesson Palette: *Interpersonal* Emphasis



SUBJECT AREA: Literature

INTELLIGENCE EMPHASIS: Interpersonal

LESSON OBJECTIVE: To initiate a lively dialogue with characters from a story or play the class has to read, and to discover how things written in the past can inform our lives today.

SUPPLIES/MATERIALS:
- large index cards (one per student)
- masking tape
- marking pens

ROOM ARRANGEMENT: Desks arranged in a circle with two desks designated as the head of the circle

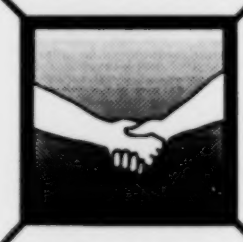
THE LESSON . . .

STAGE I
AWAKEN

Trigger interpersonal intelligence by creating situations where people are working together with others for common goals, where they are having meaningful encounters with each other, and where being able to notice distinctions among persons is important and necessary.

STAGE III
TEACH

Teach for and with interpersonal intelligence using the specific tools of this intelligence and apply them to help learn the content, acquire specific knowledge, and achieve the lesson's goals and/or objectives.



STAGE IV
TRANSFER

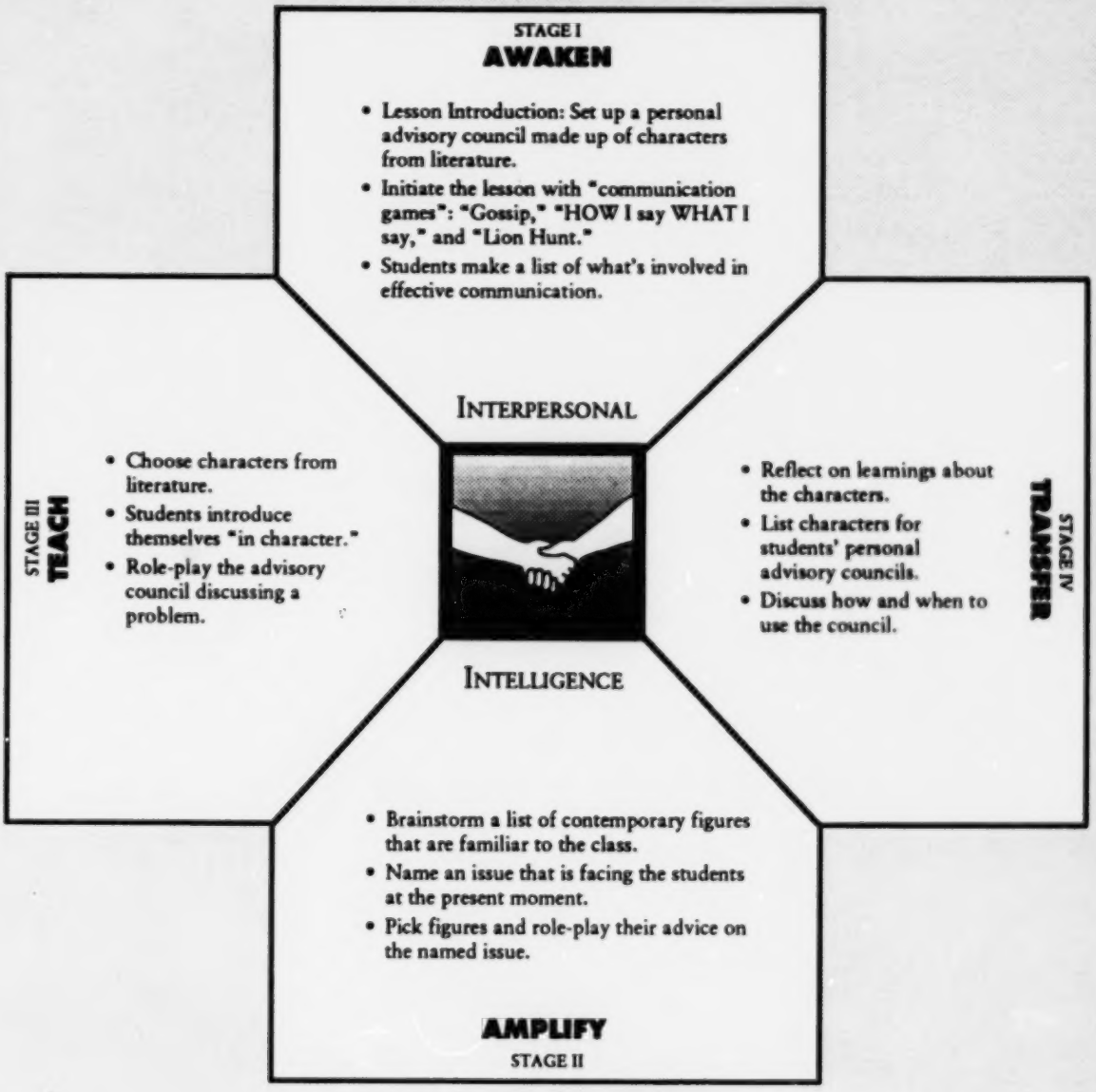
Transfer interpersonal intelligence to life by discussing the intelligence tools used, finding applications beyond the lesson to other curriculum areas, and finally integrating it into the task of living in the world outside of the classroom.

Strengthen interpersonal intelligence by practicing reflective listening, working as a member of a team, giving and receiving empathetic feedback, being aware of others' feelings, motives, and opinions, and effective person-to-person communication.

AMPLIFY
STAGE II

The Model

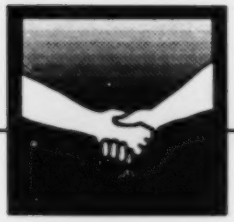
. . . AT A GLANCE


STAGE I
AWAKEN
• Lesson Introduction: Set up a personal advisory council made up of characters from literature.
• Initiate the lesson with "communication games": "Gossip," "HOW I say WHAT I say," and "Lion Hunt."
• Students make a list of what's involved in effective communication.
INTERPERSONAL
STAGE III
TEACH
• Choose characters from literature.
• Students introduce themselves "in character."
• Role-play the advisory council discussing a problem.
STAGE IV
TRANSFER
• Reflect on learnings about the characters.
• List characters for students' personal advisory councils.
• Discuss how and when to use the council.
INTELLIGENCE
• Brainstorm a list of contemporary figures that are familiar to the class.
• Name an issue that is facing the students at the present moment.
• Pick figures and role-play their advice on the named issue.
AMPLIFY
STAGE II

The Model *Applied*

"Forming A Personal Advisory Council"

A LITERATURE LESSON WITH



Interpersonal Intelligence

Lesson Procedures

INTRODUCTION

Literature is the study of other people's ideas and feelings about living. At the same time, to study literature is to study oneself—one's own ideas and feelings. In this lesson, students enter into dialogue with various characters from a story or play. In the process they will discover how things written in the past can inform their lives today. They will learn how to seek advice on contemporary problems and issues by consulting wisdom from the past. Inform the students that they will be using their interpersonal intelligence in this lesson and ask them to pay attention to what this is like and what happens as they use this way of knowing.

At least three ways of knowing beyond the interpersonal are active in this lesson. Verbal/linguistic intelligence is involved when students spontaneously create dialogue for a character from literature. Visual/spatial and body/kinesthetic intelligences are involved later as they role-play a chosen character.

✒ Interpersonal intelligence is the "person-to-person" way of knowing, and as such, it must rely on all the other intelligences in order to express itself. It therefore involves a great deal of neurological activity including both the right and left hemispheres of the brain, the limbic system (the seat of emotion), the cortex (the place of relating, loyalty, and trust), and the neo-cortex (the complex, eighth-inch thick covering of the brain which is responsible for higher-order thinking and reasoning processes). In addition, researchers have observed that the frontal lobes of the brain are active in interpersonal encounters, although not much beyond this is known about their function. (See brain diagrams, p. xxv).

AWAKEN

STAGE I

✒ The heartbeat of interpersonal intelligence is the sense of positive interdependence-- "we sink or swim together," "two heads are better than one," and "all of us can do more together than any one of us can do alone." It is awakened in situations that require the support, energy, and

1. Begin by leading students in several communication/listening games. You might try such things as:
   - "Gossip"—Whisper a message in one student's ear and have each in turn repeat the message by whispering it in their neighbor's ear until it has made its way around the class. Have

cooperation of other people to complete a given task. These "communication games" are designed to trigger both the desire to relate to each other and the use of some of the capacities that are part of interpersonal intelligence, especially the ability to listen to each other. When you ask them to list things that are involved in effective communication, you are creating an awareness that there are "social skills" that can be learned, and, like any skill, practiced and improved. Students are often deeply fascinated with this whole area of interpersonal relationships and the possibility of improving them. This is especially true for middle school and secondary students whose own peer relationships may be their most important locus of self-identity, esteem, and security. Almost any initiating activity that asks students to relate to and rely on each other will work to awaken this very powerful way of knowing.

the last student repeat the message aloud and note how it has changed in the process.

- "HOW I say WHAT I say"—Choose a short love poem and read it to the class. Then read it as if you are very upset. Have several students practice reading it in different ways and notice what happens to the message of the poem when it is read in different ways; for example, read as if it were a comedy script, as if you were speaking to an infant, or as if you were totally bored.
- "Going on a Lion Hunt"—Begin by saying (and have the class say with you) "We're going on a lion hunt, through the deepest jungle, we're going on a lion hunt and I'm going to take a _____." Fill in the blank with some item you think will be needed on the lion hunt. Then begin the chant again only this time when you get to the blank, the person sitting to your left repeats what you said and adds something of his/her own. The game proceeds around the circle with each student having to repeat all the previous items before adding their own.

2. On the board or overhead, have students brainstorm what is involved in effective communication and listening. Just what does it take?

3. Tell the class that in this lesson they are going to have a chance to communicate with and listen to characters from literature.

STAGE II

AMPLIFY

☛ This exercise requires learning to step outside of one's own ideas, opinions, and feelings and to assume those of another person.

A certain degree of self-transcendence occurs here. As a result, students have an opportunity to unlearn some of the poor interpersonal habits they may have developed. Common among these habits are thinking there is only one right answer to a problem or issue, not being able to communicate effectively when there is disagreement, and getting so caught up in their own opinions, thoughts, and feelings that they completely miss what another person is trying to communicate.

1. Tell the class that you want them to experiment with what it's like to stand in someone else's shoes and become another person.

2. Model the following process for the students and then let them practice with each other:
   - Brainstorm a list of contemporary figures that are familiar to the class.
   - Have students list five issues that are of concern to them at the present moment.
   - Pick a figure and one of the issues from the list and pretend that you are that person giving your advice and/or opinion about the issue. Speak "in character" as fully as you can.
   - Ask students to think of other things the figure might say or do in relation to the issue.

3. Ask for several volunteers to choose a different figure from the brainstorm list and to role-play their advice/response/opinions about another issue on the list.

4. Say to the students, "This is what we are going to be doing with characters from literature in our lesson today."

BEST COPY AVAILABLE

STAGE III

TEACH

☛ The advisory council game provides an opportunity for students to use a wide range of their interpersonal knowing capacities to learn more about literature and to discover some of the wisdom of the past that can help them with their lives today.

• Students should choose a character with whom they are familiar and with whom they already have a certain degree of identification. If more than one student has chosen a particular character, you may want them to sit together as a group, or you may want them to choose certain times or periods of his/her life to represent. In the choosing process they begin to establish an interpersonal linkage with their character. They then present themselves to the rest of the class "in character." This presentation adds two other intelligences, visual/spatial (in that they must actively imagine themselves as their character) and body/kinesthetic (in that they make gestures/physical movements like the character would).

By having to become another person and give advice they imagine this person would give, students gain both a deeper appreciation of their character and a sense of personal connection to the past.

1. Pass out a large index card and marker to each student. Individually, they are to think of a character they have studied in literature whom they feel they know fairly well and can identify with in some way.

   [NOTE: You may have to "prime the pump" by reminding them of some of the stories/plays you have studied and help them think of some of the characters they have encountered.]

2. When they have chosen their characters, have them write the character's name on the index card so that everyone else can see. Distribute tape and instruct them to tape the name of their character to their chest. (Or, have them fold their card so it stands up on the desk in front of them.)

3. Now give them a moment to figure out how to introduce themselves "in character" to the rest of the class; for example, "My name is Pip, and I am filled with many great expectations for the future." When they are ready, proceed around the circle with each student introducing him or herself in character.

4. Say to the class, "We are now going to play a game in which we pretend that this group of characters is an advisory council trying to help someone solve a problem." Ask for a volunteer to be the "advisee" in the game.

5. Have the advisee name a real problem or issue that he/she is facing now (nothing too personal) that they would be willing to share with the class. Have them briefly tell the class what the issue is.

☛ By posing a modern-day problem to the advisory council you are helping students to integrate their knowledge about their character (and the story/play they represent) with their own lives today. In this process students experience the fact that there are usually multiple perspectives on a given problem. Try to encourage the council to occasionally talk amongst itself, challenging each other, disagreeing, and arguing. However, do not let them get off on tangents and lose the focus of the discussion.

6. Now have the advisee ask the different characters of the "advisory council" questions that relate to the issue/problem on which they need counsel. The advisee addresses the character by the name on the card, and the student behind the card responds as if they were their chosen character.

   [*NOTE: You must play the role of the moderator in this discussion, making sure that the students take turns and that all have a chance to participate. Keep it lively, and even encourage the characters of the council to talk and/or argue with each other about the advice they are giving. The key is to help them "stay in character" as they speak.*]

7. Conclude by going around the circle again with each member of the council having a chance to say a final word to the advisee as their character. Then have the advisee tell the council what about their advice was helpful. Have everyone shake hands with each other and say "It was good to see you again," etc.

8. Bring the game to a close by having them take off the character cards, and talk about the process.

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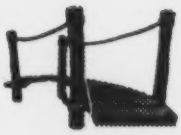
STAGE IV



TRANSFER

☛ The goal of the transfer part of the lesson is to help students take what they have learned in the lesson and apply it to other areas of their school work and their everyday lives outside of the school setting.

There are two dynamics of transfer that occur at this point: 1) students speak about what they learned about their character and/or the story/play in which the character appears, thus appropriating the content of the lesson; and 2) they list characters from literature they think could help them gain fresh perspectives on their own lives. They think about the possibility for further experimentation with the advisory council, thus making connections between the lesson and life beyond the classroom.

Reflect on the lesson with the students in the following manner:

1. Ask the class these questions as a way to process the game:
   - What words of advice or comments do you remember?
   - What did you like about the exercise? Not like?
   - What was easy about the exercise? Hard?
2. Have students brainstorm a list of people they would like to have on their own personal advisory council and say why they would choose them.
3. Ask students to individually write down situations in which they would use their council. What would be the most effective use of it?

A "SPIRAL" ADAPTATION OF THE LESSON

For Elementary Levels

1. Focus the lesson on understanding characters from a story students have just read. What kind of characters are they? What do they like? How do they feel? Do you like them? (why/why not?)
2. Practice role-playing conversations between different characters in the context of the story. Extend the story and see how characters relate and react in new situations.
3. Pretend different characters are present in our world today. Role-play what it might be like if certain characters were the teacher of this class, what they would be like as a member of your family, and what it would be like if they were your best friend.

For Secondary Levels

1. Focus the lesson on analyzing different characters and what they bring to the story or play; for example, they may represent certain motifs, different virtues (such as in the old morality plays), or various factors of "the human condition" (such as in many of Shakespeare's plays).
2. Teach students how to create mind maps (see glossary, p. 149) that show all the different aspects of a character that they can think of.

3. Create a mock UN Security Council meeting with students playing the council members as if they were one of the characters they mind-mapped. Discuss such things as the plight of third-world countries, how to deal with an aggressor nation that violates the sovereignty of another, or protection of the world's natural resources.

ASSESSMENT TIPS

FOR THEIR PORTFOLIOS

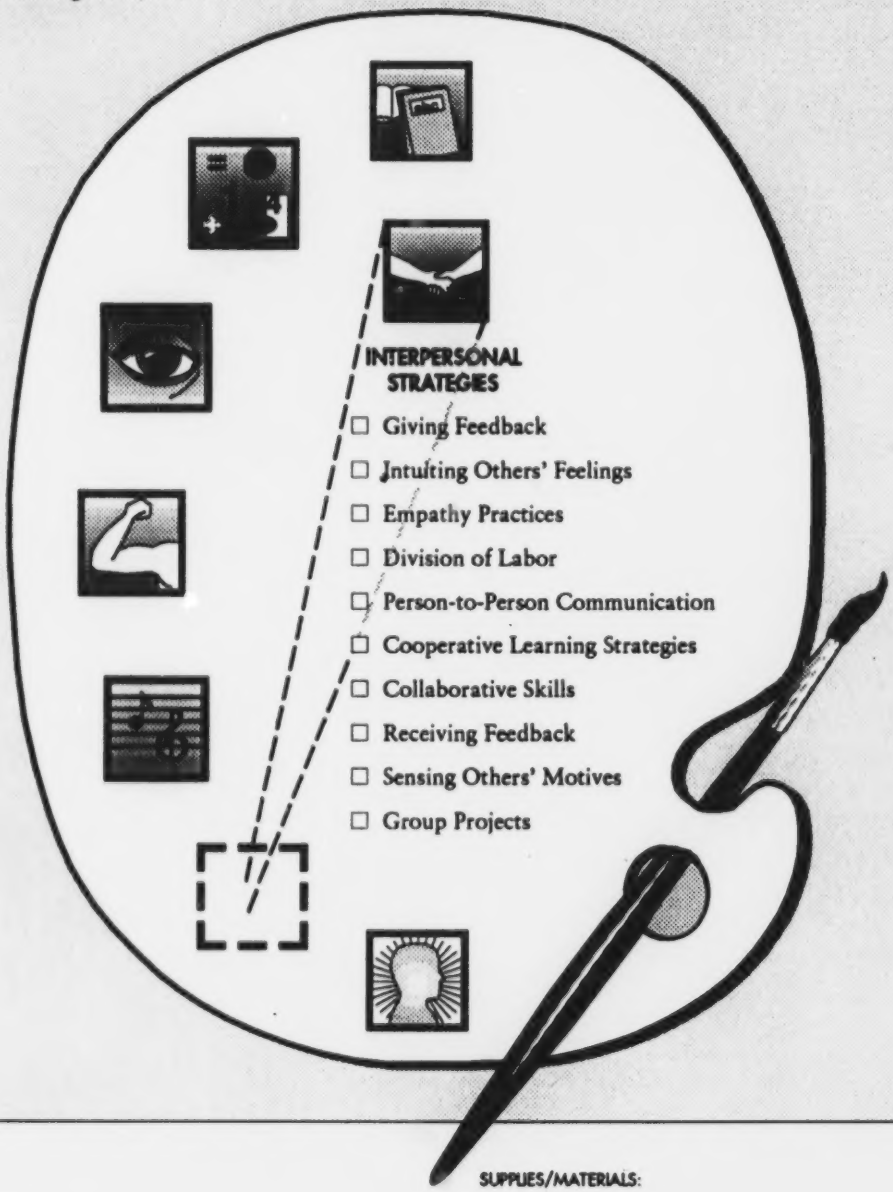
1. Have them include the card with the name of the character they chose with notes on the card regarding key things about the character.
2. Have them write a brief paragraph on what they learned from their character and the story in which the character appears.

FOR THEIR JOURNALS

1. Have them include the brainstorm list they made on characters for their own advisory council.
2. Have them add notes from the discussion on when and how to most effectively use their advisory council.

Look to the Past . . .

(Rethink a lesson you have completed recently. How would you restructure it to teach FOR and WITH Interpersonal Intelligence?)



SUBJECT AREA:

INTELLIGENCE EMPHASIS:

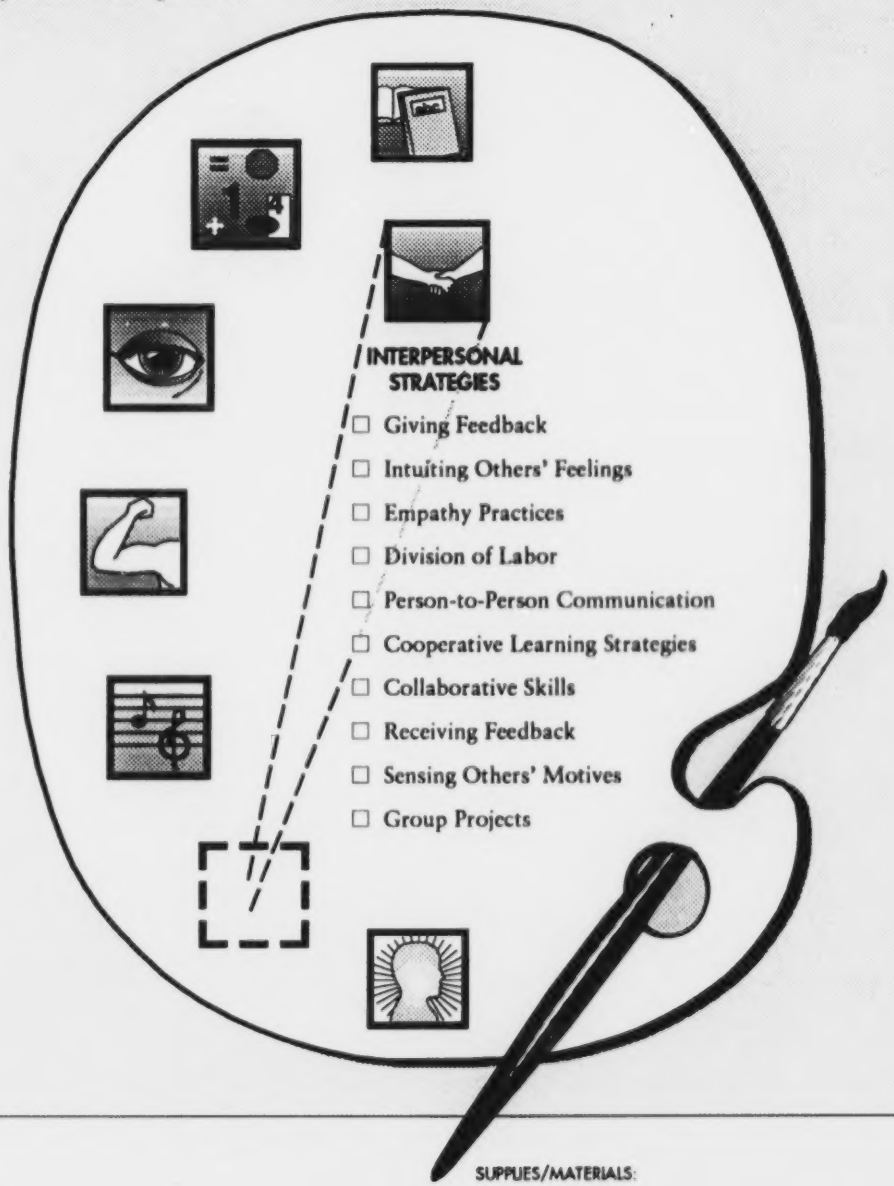
LESSON OBJECTIVE:

SUPPLIES/MATERIALS:

ROOM ARRANGEMENT:

Look to the Future . . .

(Think about a lesson you have coming up in the near future. How would you structure it to teach FOR and WITH Interpersonal Intelligence?)



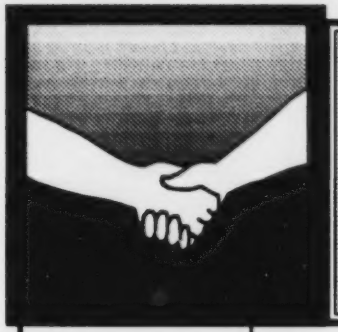
SUBJECT AREA:

SUPPLIES/MATERIALS:

INTELLIGENCE EMPHASIS:

LESSON OBJECTIVE:

ROOM ARRANGEMENT:



Lesson Planning Ideas

Interpersonal

HISTORY	MATHEMATICS	LANGUAGE ARTS	SCIENCE & HEALTH	GLOBAL STUDIES & GEOGRAPHY	PRACTICAL ARTS & P.E.	FINE ARTS
Do an historical period investigation "jigsaw" (each one learns part) ‡	Solve complex story problems in a group	Experiment with joint story-writing—one starts then pass it on	Discuss "Saying No to Drugs" and create "Say NO" strategies	Assume the perspective of another culture and discuss a news item	Teach and play a series of non-competitive games †	Learn a new dance and teach it to others
Role-play a conversation with an important historical figure	Do a statistical research project and calculate percentages	Analyze a story and describe its message—reach a consensus	Assign group research projects—groups design and implement plans	Find the relation of geography/climate to cultural values/customs	Assign teams to prepare and serve meals from foreign countries	Create a team cooperative sculpture from clay
"Pass over" into other times/lives—describe their feelings/thoughts †	"Each one teach one" new math processes/operations †	Use a "human graph" to see where a group stands on an issue †	Use lab teams for science experiments and exercises	Create scenarios of "culture shock" and analyze for its causes	Use peer coaching teams for individual shop projects †	Sketch your partner with different expressions
Make a case for different perspectives on the Revolutionary War	Describe *everything* you do to solve a problem to a partner	Read poetry from different perspectives and in different moods	Discuss controversial health topics and write team position papers	Brainstorm and prioritize ways to overcome "ugly Americanism" †	Have students work in pairs to learn and improve sports skills	Practice "Stop the Action and Improvise" with a play †
Discuss the impact of key historical decisions on today's world	Have teams construct problems linking many math operations, then solve them	Conduct language drill exercises with a partner	Describe the "before and after" of key scientific paradigm shifts	Learn to read different kinds of maps, then teach another how to understand them	Create cooperative computing teams to learn computer skills	Learn to sing rounds and counter-melody songs †

† See Glossary
‡ See Glossary and Appendix C

"How Am I Involved and What Can I Do?"

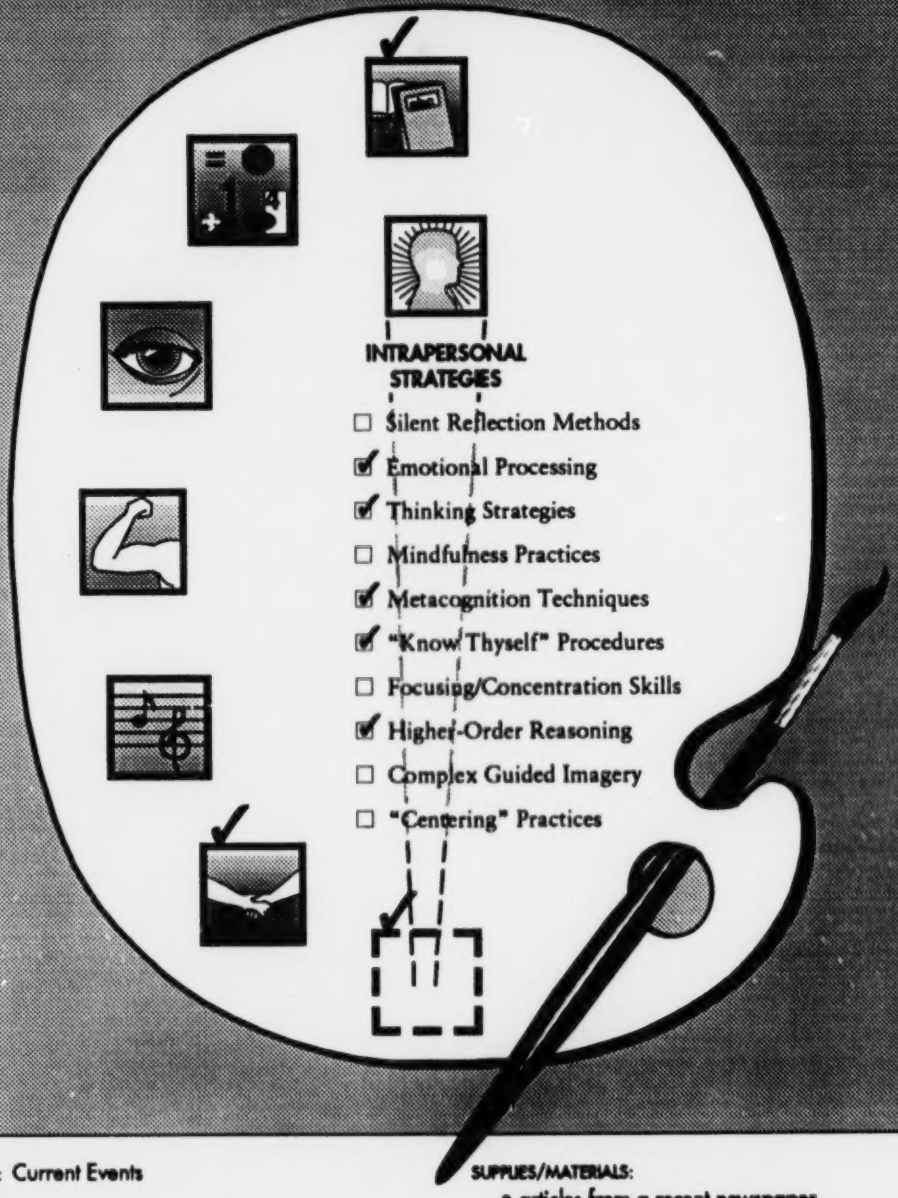
TEACHING WITH

INTRAPERSONAL INTELLIGENCE

CHAPTER **7**

A Current Events Lesson:
Secondary School Level

Lesson Palette: *Intrapersonal* Emphasis



SUBJECT AREA: Current Events

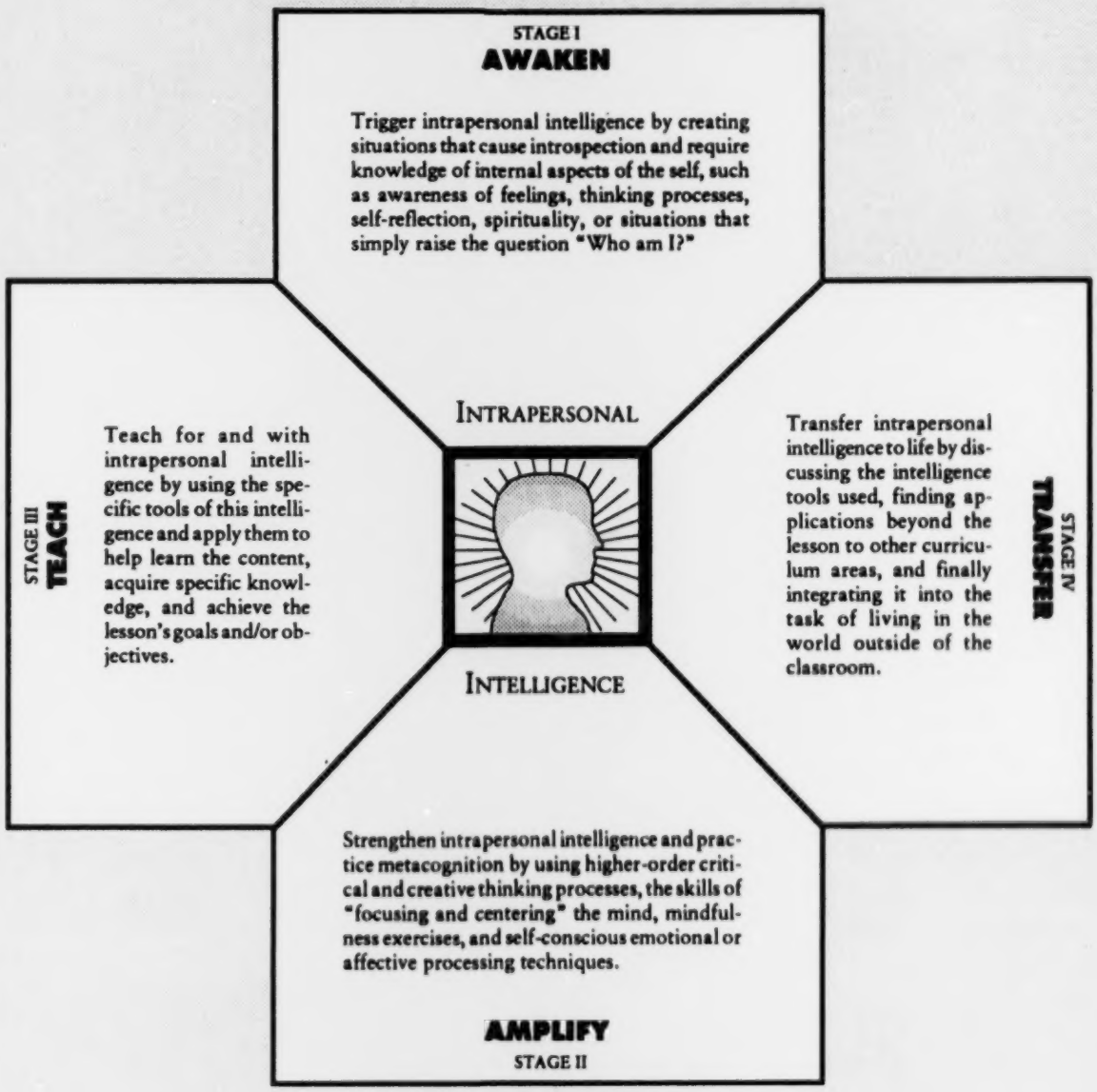
INTELLIGENCE EMPHASIS: Intrapersonal

LESSON OBJECTIVE: To introduce a four-level process for understanding, dialoguing with, and getting personally involved in current events.

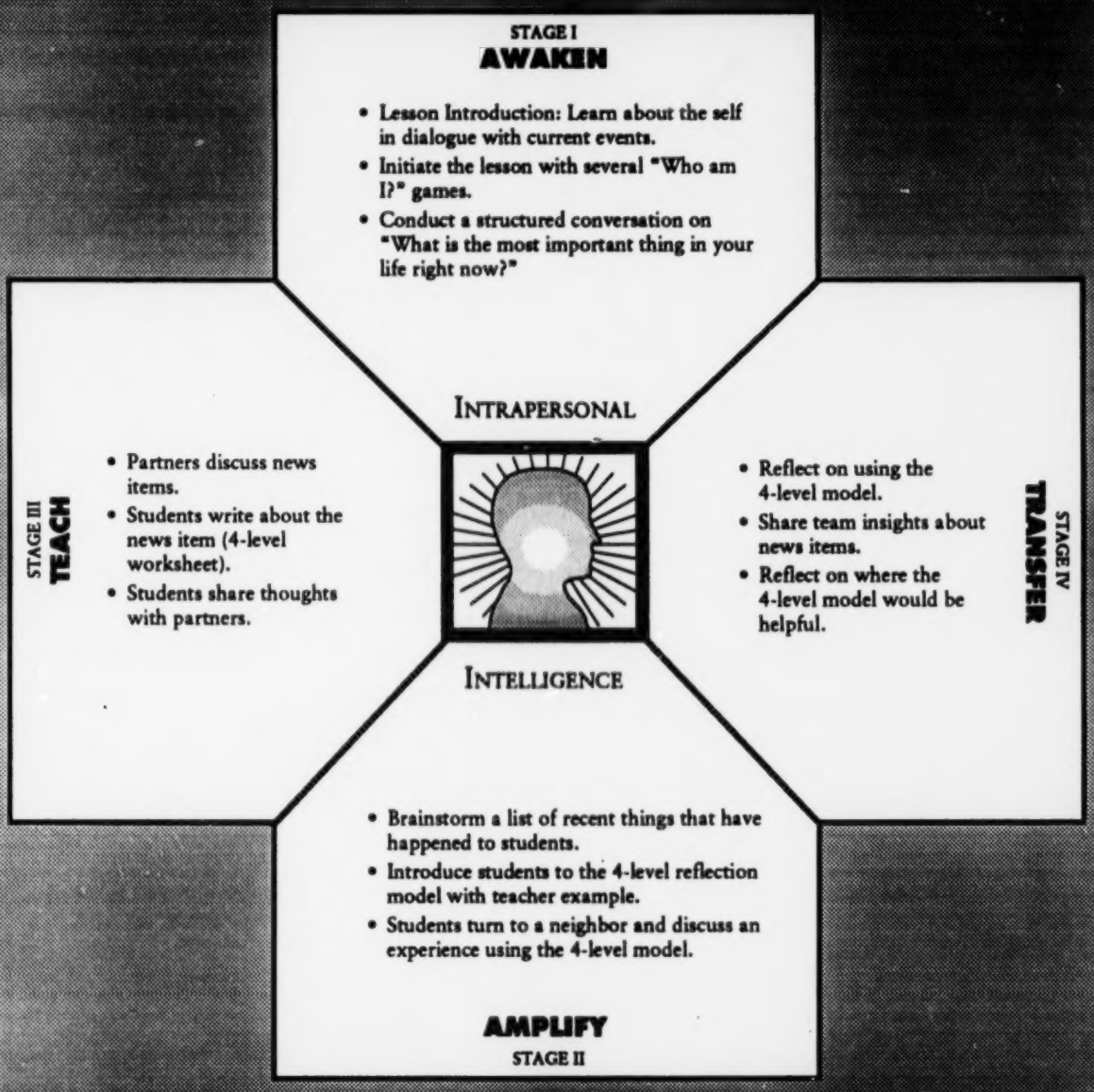
SUPPLIES/MATERIALS:
- articles from a recent newspaper
- the 4-level reflection model (see p. 131)
- pen/pencil

ROOM ARRANGEMENT: Desks separated for individual work

THE LESSON . . .


STAGE I
AWAKEN
Trigger intrapersonal intelligence by creating situations that cause introspection and require knowledge of internal aspects of the self, such as awareness of feelings, thinking processes, self-reflection, spirituality, or situations that simply raise the question "Who am I?"
INTRAPERSONAL
STAGE III
TEACH
Teach for and with intrapersonal intelligence by using the specific tools of this intelligence and apply them to help learn the content, acquire specific knowledge, and achieve the lesson's goals and/or objectives.
Transfer intrapersonal intelligence to life by discussing the intelligence tools used, finding applications beyond the lesson to other curriculum areas, and finally integrating it into the task of living in the world outside of the classroom.
STAGE IV
TRANSFER
INTELLIGENCE
Strengthen intrapersonal intelligence and practice metacognition by using higher-order critical and creative thinking processes, the skills of "focusing and centering" the mind, mindfulness exercises, and self-conscious emotional or affective processing techniques.
AMPLIFY
STAGE II

The Model


STAGE I
AWAKEN
• Lesson Introduction: Learn about the self in dialogue with current events.
• Initiate the lesson with several "Who am I?" games.
• Conduct a structured conversation on "What is the most important thing in your life right now?"
INTRAPERSONAL
INTELLIGENCE
STAGE III
TEACH
• Partners discuss news items.
• Students write about the news item (4-level worksheet).
• Students share thoughts with partners.
STAGE IV
TRANSFER
• Reflect on using the 4-level model.
• Share team insights about news items.
• Reflect on where the 4-level model would be helpful.
• Brainstorm a list of recent things that have happened to students.
• Introduce students to the 4-level reflection model with teacher example.
• Students turn to a neighbor and discuss an experience using the 4-level model.
AMPLIFY
STAGE II

The Model *Applied*

"How Am I Involved
And What Can I Do?"

A CURRENT EVENTS LESSON WITH

Intrapersonal Intelligence

Lesson Procedures

☛ I like to call intrapersonal intelligence the "introspective intelligence" for it involves awareness about the self and its feelings. Interpersonal intelligence looks outward and knows in and through relationships with others—it is the "person-to-person" way of knowing. Intrapersonal intelligence, on the other hand, looks inward and knows in and through investigating the self. As with interpersonal intelligence, intrapersonal intelligence needs all the other intelligences to express itself, and thus it is an integrator and synthesizer of the other ways of knowing.

INTRODUCTION

There is an ancient saying that goes, "No man is an island entire in itself; every man is a piece of the continent, a part of the main." The truth of this is very evident in our world today—what happens in even one small corner of the world affects us all. In this current events lesson, students will be dialoguing with certain events happening around the world. The process of the lesson will lead them to various levels of self-discovery as they begin to see their connection to, and involvement in, these events. Inform students that they will be using their intrapersonal intelligence in the lesson and ask them to observe what this is like and what happens.

This lesson uses verbal/linguistic and interpersonal intelligences in addition to intrapersonal intelligence. Verbal/linguistic intelligence tools are employed in their reading of the news article and in discussing it. The interpersonal intelligence includes the cooperative group structure and the need to listen to each other and effectively communicate their own feelings and points of view.

STAGE I

AWAKEN

☛ Intrapersonal intelligence is awakened when we are in a situation that requires knowledge of the internal aspects of the self, such as one's emotional state, thinking patterns, intuitions, creativity processes, and spiritual values/beliefs.

1. Ask the class to pretend it can travel twenty years into the future. Ask, "What are you doing with your life?" Go around half of the class with each student answering the question.

These questions are designed to get students to look within themselves and begin to raise questions like, "Who am I?" and "What am I about?" In essence what these questions do is to help them reflect on a reflection about another reflection! When you see this happening and hear them reflecting deeply about their own lives, you know that intrapersonal intelligence has indeed been activated.

- Ask the class to reflect on what they heard. "If you were to make some summary statements or observations about our answers to this question what would you say?"

2. Now go around the other half of the class and ask, "What's the most important thing in your life right now ?"
   - Once again ask the class to reflect on what they heard. "If you were to make some summary statements or observations about our answers to this question what would you say?"

STAGE II

AMPLIFY

☛ Working with intrapersonal intelligence is especially difficult in our culture given our attitudes about introspection. On the one hand, we are often like a bunch of Mad Hatters rushing about because we are "late, late for a very important date." Our lives are so full of things that must be done, we often feel there is no time to stop and "go inside." Thus we do not learn the specific skills of self-reflection and self-awareness. Furthermore, we carry with us a certain fear of what we might find if we look too deeply within. Some of this probably stems from popular images of the unconscious parts of our personality which have been fed by impressions of Freudian analysis, (thought to open deep, dark closets full of terrible secrets and repressed problems from our childhood). We relate to the unconscious as something that is better left alone for it can "open a Pandora's box!"

In spite of all this "bad press," researchers today are discovering that far from something to be feared, the inner worlds of the self are a vast storehouse of untapped potentials that are available to us if we learn the methods and techniques of accessing their riches. And the good news is, the methods and techniques do exist and you don't have to be a spiritual guru or a neurological sophisticate to learn them!

1. Tell the class that in this lesson they will have an opportunity to think about the daily news and how it affects their lives as well as how their lives affect the daily news.

2. Put the following questions from the 4-level reflection model on the board or overhead and briefly explain the model to students (see blackline, p. 131). Pass out two 4-level reflection worksheets to each student.

   How am I involved? Where and how does the issue or concern touch my life? How does it make me feel? What are my thoughts and opinions about it?

   P/M/I (pluses, minuses, interesting) (see glossary) What are the pluses of the issue (positive things about it)? What are its minuses (negative aspects)? What do I find interesting about the issue?

   My brainstorm of what could/should be done. If I was totally, completely, unconditionally "in charge," what would I do? What do I think needs to happen in this situation? What action(s) should be taken?

   What I can do now? What steps could I take now (even if they seem very small and inconsequential) to bring about a resolution to this issue (for example, can I recycle to do my small part to save the environment)?

   Say, "This is a model that can help you think about an event on different levels."

3. Have each student write down three to five things they are struggling with in their life at the present moment. These items can be from school, family, church, friends, etc.

4. Say, "In a minute you will have a chance to talk about one of these issues with a partner using the 4-level reflection model. Then, after we practice using the model, we will apply it to current events in the world." Give them an example of an issue from your own life.

EXAMPLE

Issue: Daughter's College Education

I. How Am I Involved?
- I want her to go to college
- I think a year off between high school and college might be helpful to her
- It's going to cost me a bundle
- It makes me feel old (it seems that just yesterday she was entering elementary school)

II. PMI

Pluses (of college)
- Sets her up for higher salaries when she enters the workplace
- It brings about a maturing and sense of responsibility for one's own life
- Tight finances will force her to have a job to help pay

Minuses (of college)
- She's not diligent with her high school studies and college is much more demanding
- Tight finances, therefore she may not be able to pick the school she wants most
- Tight finances will force her to have a job to help pay

Interesting
- If she took a year off between high school and college, she might be more ready for college
- She is very interested in drama and other cultures

III. What could/should be done?
- If I was "in charge" I'd put her in a school that uses cooperative learning extensively
- I should be working more with her on her studies—helping her learn study methods for greater lesson success

IV. What Now?
- Start gathering information about different schools and costs
- Explore work/study programs which provide time in the "real world"
- Brainstorm job possibilities that utilize drama and multi-cultural interests

☛ When you, as the teacher, model how to do something for the students, try to make it as close as possible to the operation or exercise they will be performing later in the content part of the lesson. However, in the practice itself use familiar content so that students can give their attention to learning the skill you are teaching and not worry about getting some information they'll need for a test later on.

☛ When the students are practicing using the 4-level reflection sheet with each other, it is important that you carefully monitor and observe their discussions to insure that they are using the model and that they are staying on task. One way to do this is to have each person take notes as the other is speaking and then give those notes to his/her partner. This will also help students track and focus their reflections on the 4-level model.

5. Now have students turn to a partner and each take one of their issues through the 4-level reflection process. Be sure to instruct them to listen to each other and ask that they not make "wise-cracks" while the other is speaking.

☛ Working with a partner activates interpersonal intelligence skills. The sharing and discussion between them calls forth verbal/linguistic capacities.

6. After both partners have had a chance to share their issue using the 4-level process, stop and briefly reflect with the class as a

whole using questions like the following:

- What was this like for you? What happened?
- What did you you notice about the different levels? How did they make you feel?
- What happened to your issue as you discussed it using these four levels?
- What questions do you have about using this model?

STAGE III

TEACH

☛ Once students understand how to use the 4-level reflection model, they apply it to academic content.

This task again uses interpersonal intelligence skills to help students understand the item, necessary background information, its relevance/import, and discuss initial feelings and thoughts about the item.

1. Tell students that they are now going to use the 4-level reflection process to have discussions with each other about last evening's news. Remind them that in thinking about and dialoguing with the news they can often gain a much deeper appreciation for what is going on in our world.

☛ In this time of sharing, students often learn a great deal from each other and about themselves. They begin to notice similarities and differences between themselves and their fellow students. They begin to develop a sense of security and/or confidence about their own thoughts, opinions, and ideas. As they share, also encourage them to "steal" any good ideas or thoughts from each other and add these to their own reflections. This can help them understand that our so-called self-identity is really a combination of what goes on inside and what we experience in the outside world.

2. Now have students select a new partner, different from the person they talked with in the above practice conversation. Pass around a hat with news articles from the previous day's paper in it. Each pair is to select one news article from the hat.
3. Give the pairs an opportunity to read and understand the article together. When they have completed the reading, ask them to discuss it using questions such as the following:
   - What are the main points of the article? Who is involved?
   - What do we know about the background or history of this article?
   - What are the main issues or points of view?
   - How do I feel about this? What are my thoughts and opinions?

☛ It is important for them to write something for all four levels, even if they are not sure about what they are writing. Encourage them to trust their intuitions and record whatever pops into their head without evaluating it too much at this point. Some students may want to draw diagrams, pictures, or symbols to express their feelings. Others may want to write poetry, or even turn their thoughts into a very short story. Anything they want to do is fine as long as they can demonstrate to you that they are in fact reflecting on all four levels of the model.

4. When the partners have had time to discuss the article with each other, instruct them to turn to their second 4-level reflection worksheet and to work *individually* writing answers to the questions on the sheet. They must have something for each level of the reflection to succeed in this lesson, so watch carefully and give assistance to any students who seem to be having trouble.
5. When you notice that most students have completed the assignment, have them turn to their partner again and each share answers to the questions on the 4-level reflection worksheet. If time permits, have one pair join another pair and share their reflections on their article.

BEST COPY AVAILABLE

STAGE IV

TRANSFER

☛ The goal of the transfer part of the lesson is to help students take what they have learned in the lesson and apply it in other areas of their school work and in their everyday lives outside of the formal school situation.

Two things take place in these reflections. They, first of all, discuss the pros and cons of the 4-level model and think about how to use it beyond this lesson and the school/classroom environment. This is an important transfer or "bridging of the learning" strategy. Second, they discuss insights and thoughts that the study of the news provoked. This dimension of reflection helps students learn to become thinkers rather than simply digesters of information.

Process the lesson with the students in the following manner:

1. Reflect with the whole class on the use of the 4-level model to discuss the news. Ask questions like the following:
   - What did you find interesting about approaching the news in this way?
   - Which level was the easiest? Which was the hardest?
   - What do you like about this model? Not like?
2. Make a brainstorm list on the board or overhead of other times students think the 4-level process could be helpful to them.
3. Now have each pair share with the rest of the class an insight or thought they had about the news as they talked together about it in this manner.

A "SPIRAL" ADAPTATION OF THE LESSON

For Elementary Levels

1. Focus the lesson on learning to recognize pictures and names of key people in the news today and on being aware of how these people affect us.
2. Teach students to ask questions about what is happening in a story they already know, such as the "Three Little Pigs," "Goldilocks," etc. Have them make up questions they would ask the characters or a message they would give, if this were possible.
3. Show students pictures of key people in the news and tell a brief story about why they are in the news. Have students pretend they can ask the person a question or that they can give them a message—"What would you say?"

For Middle School Levels

1. Focus the lesson on listening to the evening news and understanding what is going on (including key people, places, and events).
2. Practice listening to a pre-recorded curriculum event in the classroom from the previous day. Learn to recognize who was speaking, remember what they said, and recall what was going on in the classroom. Have students tell about how they feel and what they think about the tape.

3. Show students a video segment of the evening news from the night before. Recall people, places, and events with the class. Then have students write a letter to one of the people telling their feelings about what was reported on the news.

ASSESSMENT TIPS

FOR THEIR PORTFOLIOS

1. Include their written responses to the news on the 4-level reflection worksheet.
2. Include a copy of the news article and any notes they made as they discussed it with their partner.

FOR THEIR JOURNALS

1. Have students do a PMI on using a 4-level model.
2. Ask students to choose three different situations from the brainstorm list (step #2 of the Transfer section above) where they think the 4-level model can help them. Have them write a few lines about how to adapt it for their own needs.

4-Level Reflection Model

LEVEL 1

HOW AM I INVOLVED?

Where and how does the issue touch my life? How does it make me feel? What are my thoughts and opinions about it?

LEVEL 2

WHAT ARE THE PLUSES, MINUSES, AND WHAT DO I FIND INTERESTING?

Positive Aspects +	Negative Aspects −	Interesting !

LEVEL 3

WHAT DO I THINK COULD/ SHOULD BE DONE?

If I was "in charge" what would I do? What do I think needs to happen in this situation? What action(s) should be taken?

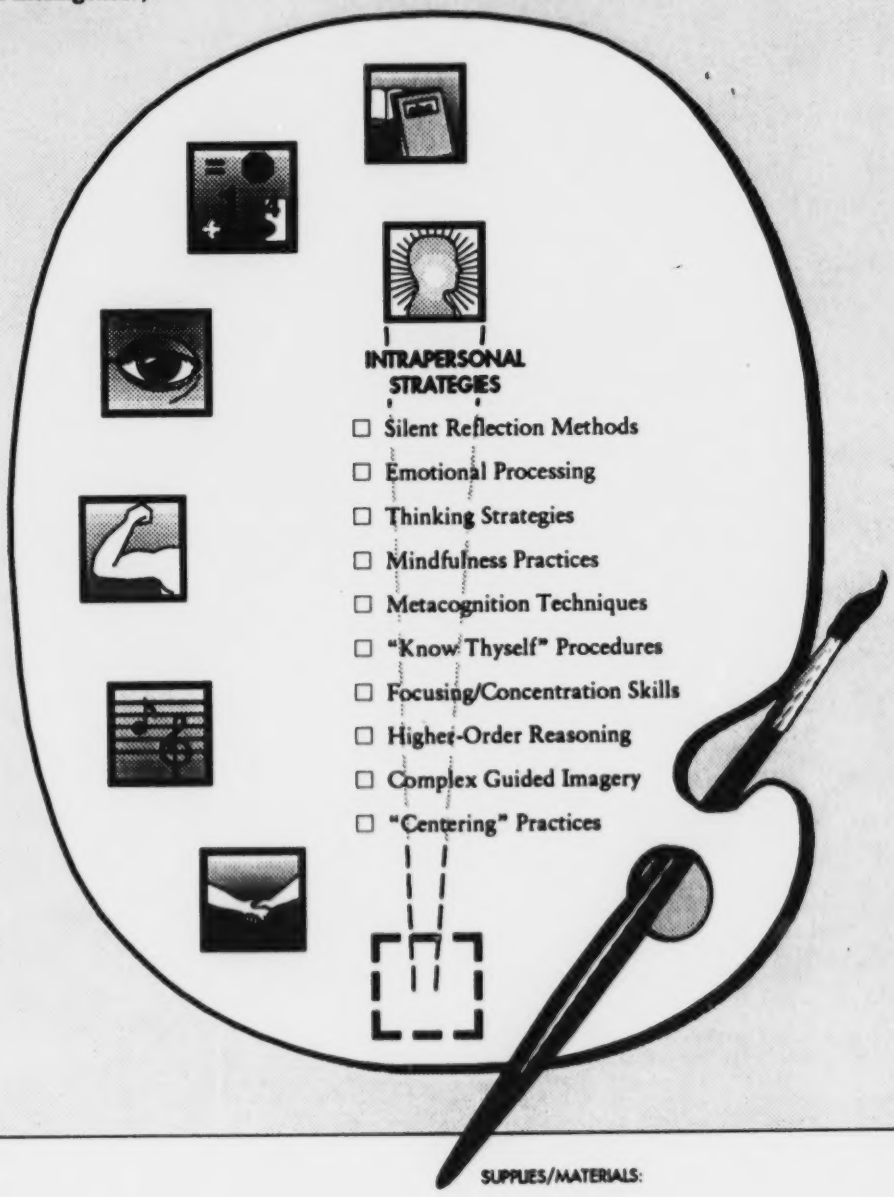
LEVEL 4

WHAT CAN I DO NOW?

What steps could I take now (even small ones) to bring about a resolution to this issue?

Look to the Past . . .

(Rethink a lesson you have completed recently. How would you restructure it to teach FOR and WITH Intrapersonal Intelligence?)



SUBJECT AREA:

SUPPLIES/MATERIALS:

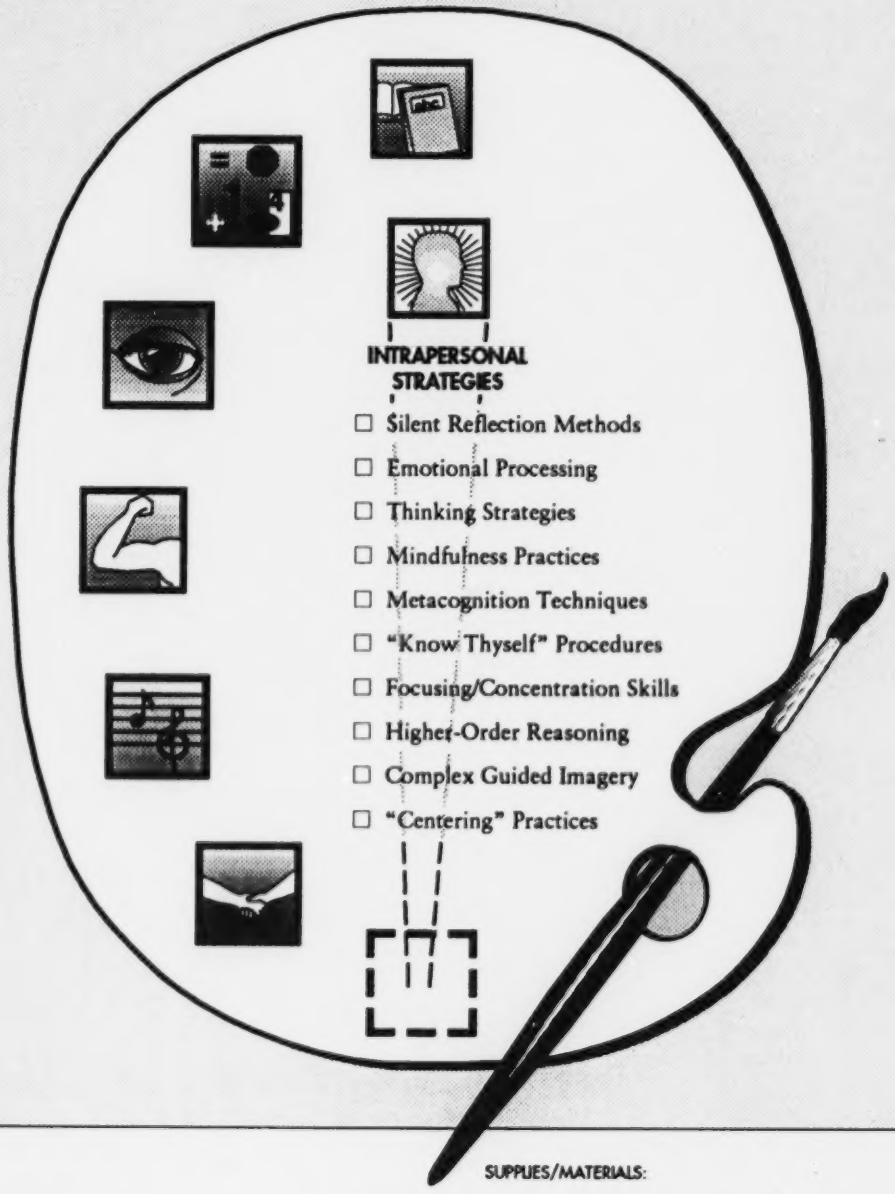
INTELLIGENCE EMPHASIS:

LESSON OBJECTIVE:

ROOM ARRANGEMENT:

Look to the Future . . .

(Think about a lesson you have coming up in the near future. How would you structure it to teach FOR and WITH Intrapersonal Intelligence?)



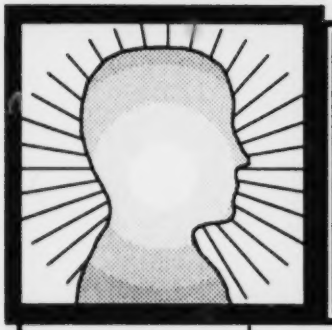
SUBJECT AREA:

SUPPLIES/MATERIALS:

INTELLIGENCE EMPHASIS:

LESSON OBJECTIVE:

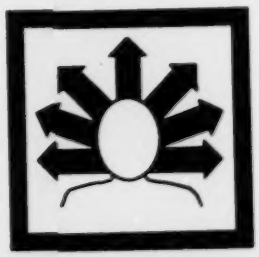
ROOM ARRANGEMENT:



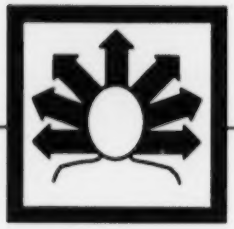
Lesson Planning Ideas
Intrapersonal

HISTORY	MATHEMATICS	LANGUAGE ARTS	SCIENCE & HEALTH	GLOBAL STUDIES & GEOGRAPHY	PRACTICAL ARTS & P.E.	FINE ARTS
Keep a journal: "Questions from my life that history might be able to answer"	Track thinking patterns for different math problems	Write an autobiographical essay: "My Life to Date"	Design, implement, and evaluate a one-month "Be Healthy" project	Try "awareness" techniques from other cultures †	Discuss how different physical exercises make you feel	Draw yourself from different angles in a mirror
Do a PMI analysis of famous historical decisions ‡	Bridge math concepts beyond school (what? so what? now what?) ‡	Write an autobiographical essay: "My Life in the Future"	Conduct silent reflections on pictures of the solar system	List criteria of your "ideal geography/climate" - find it on a map	List how things learned in shop can help in your future life	Dance the different stages of your life's journey
Discuss: "If I could be any historical figure I wanted" (who/why)	Use guided imagery to see complex story problems †	Analyze literature for "connections to our lives today"	Write about "If I could be any animal what would I be and why"	Discuss: "How I'd be different if I'd grown up in another culture"	Write down and analyze "conversations with your computer"	Creates a series of sculptures to express your moods
Write an essay on: "Mistakes from the past I won't repeat"	Evaluate your strengths/weaknesses in understanding math	Write a new poem each day for a week on "Who am I?"	Lead a series of "I Become what I Behold" exercises †	Learn "focusing techniques" and see how each culture does it †	Watch yourself fix a meal and note *everything* that goes on	Imagine yourself as *each* character in a play
Imagine people from the past giving advice for living today	Watch mood changes as you do math problems—note causes	Imagine being a character in a story/play—what would you do?	Practice techniques for achieving deep relaxation (e.g., breathing) †	Keep a "feelings diary" as you read about current events	Imagine a skill and then try to do it *exactly* as you imagined	Carefully observe the effects of music on you

† See Glossary
‡ See Glossary and Appendix C



EPILOGUE



Epilogue

The old Chinese proverb that questions whether it is better to give a man a fish for today or teach him the art of fishing to prepare him for a lifetime applies quite well to the contemporary task of education, and especially at the point of teaching FOR, WITH, and ABOUT multiple intelligences. One of the major purposes of school should be to develop as full a range of intellectual capacities in students as possible. The good news about teaching WITH multiple intelligences is that it is not an "add-on" to already over-filled curricula. Teaching WITH multiple intelligences can and should be happening every day in and through whatever curricula we are teaching. However, we must keep our attention in the right place; namely, on the development of students' fullest potential as human beings. This includes their ability to perform on various standardized tests which our culture deems an important part of education. However, I believe we can "have our cake and eat it too," so to speak. If we provide students the opportunity to develop the full range of their intellectual capacities and teach them how to use their multiple ways of knowing in the learning task, they will learn the things we are trying to teach more thoroughly than if we only permit them to learn in the more traditional verbal/linguistic and logical/mathematical ways.

In order to be successful in this endeavor, our teaching FOR, WITH, and ABOUT the intelligences needs to match the pattern of the natural development and growth of the intelligences. Each intelligence begins with what Howard Gardner calls "raw patterning" ability. This stage involves the ability to perform certain simple tasks that are foundational to the operation of a given intelligence; for example, learning certain motor skills such as walking, running, and jumping for body/kinesthetic intelligence, or learning the alpha-

bet and how to speak for verbal/linguistic intelligence. As the child develops, the raw patterning of an intelligence moves to a greater level of complexity in what Gardner calls a "symbol system." Here the basic skills of an intelligence are combined in more complex patterns in order to give expressions of meaning. For example, the ability to make different tones expresses itself as a melody in musical/rhythmic intelligence, or the ability to draw different shapes expresses itself in a picture with color and perspective in visual/spatial intelligence. The next stage of development builds on this symbol-system stage and represents itself in what Gardner calls a "notational system." Each of the intelligences has its own "language"—a language that can be taught, learned, and transmitted to others. These are things that can be recorded in some form for posterity, such as musical composition and performance (musical/rhythmic intelligence); consensus-building and an understanding of group process (interpersonal intelligence); or the conscious use of inductive and deductive thought processes (logical/mathematical intelligence). The final stage of the development of an intelligence is the "vocational or avocational pursuit" stage. The mature expression of intellectual development involves its embodiment in particular career paths of "societal service roles" such as those mentioned in the introductory chapter to this book.

In terms of the developmental journey of the human being, the "raw patterning" stage is generally the earliest part of one's childhood (infancy and pre-school development); the "symbol system" stage is represented by the early years of schooling (formal pre-school, kindergarten, and the first years of elementary school); the "notational system" stage generally occurs in the late elementary school years in the middle school/junior high years, and early secondary schooling. The "vocational or avocational pursuit" stage of development can generally be associated with the late secondary and college years, as well as adulthood.

In addition to these developmental considerations, all students possess all of the intelligences at each stage of their development, although not all of them are developed to the same degree at a given time. Therefore, certain kinds of assessment activities are needed to help us paint a profile of a given student's intelligence strengths and weaknesses so that we can help them design strategies for strengthening their weaker intelligences and learn how to use their stronger intelligences to enhance and deepen their learning.

In *Seven Ways of Knowing* I proposed five experimental approaches for assessing a student's intellectual profile. Each of these suggests that the task of assessing an intelligence profile is primarily a matter of acute observation of students involved in various kinds of activities and/or learning tasks. A summary of these follows:

1. Student Intelligence Watch. This is a checklist of various behaviors that often manifest themselves in the classroom and *may*

(especially if you observe them as a regular part of a student's life) indicate certain ways a student is trying to enhance his or her learning. These include such things as the student who is always getting up out of his/her seat, the "doodler," the "hummer," the "perpetual questioner," the "silent one," etc.

2. **Intelligence Skill Games.** These provide students with a choice of games to play. These could include such intelligence-specific things as "Pictionary," charades, crossword puzzles, tune/music recognition, etc. It is important to observe not only which game(s) they choose, but *what they do* as they are playing.

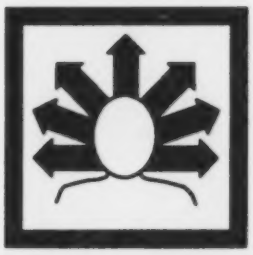
3. **Intelligence Foci Watching.** This involves showing students a complex movie or a play in which multiple intelligence capacities are clearly portrayed and/or utilized such as, any of the "Star Wars" series, Disney cartoons like "Bambi," or "The Miracle Worker." After the film or play, lead them in a discussion on what struck them. Notice the points that "captured their attention," for example the action scenes, the musical sound track, colors, symbols, emotions, etc.

4. **Complex Problem Solving.** Watch WHAT students do when given a problem to solve—one that they really care about solving. You can tell a great deal about their intelligence patterns as you catch them in the act of problem solving. Remember, the answer itself is not as important as HOW they approach it!

5. **Inventing.** Give students inventing, designing, or creating tasks to perform making sure that the full spectrum of intelligence tools is available for them to use. Then, again, notice to which kinds of tools they are drawn, and again, WHAT they do with the tools once they have them.

Howard Gardner believes that it takes about ten hours of careful observation of students involved in activities such as these to begin sensing a profile of their intelligence strengths and weaknesses. I believe that it is also crucial to mention that this profile will change as students learn about their multiple intelligences and how to use them in daily lessons and in their lives beyond school. The observation must be ongoing. The promise, of course, is that we as teachers can find strategies for coaxing students to "step beyond their limits" and become all that they can be!

I wish you an exciting and wonder-filled adventure as you journey into these realms of amplified ways of knowing and being!



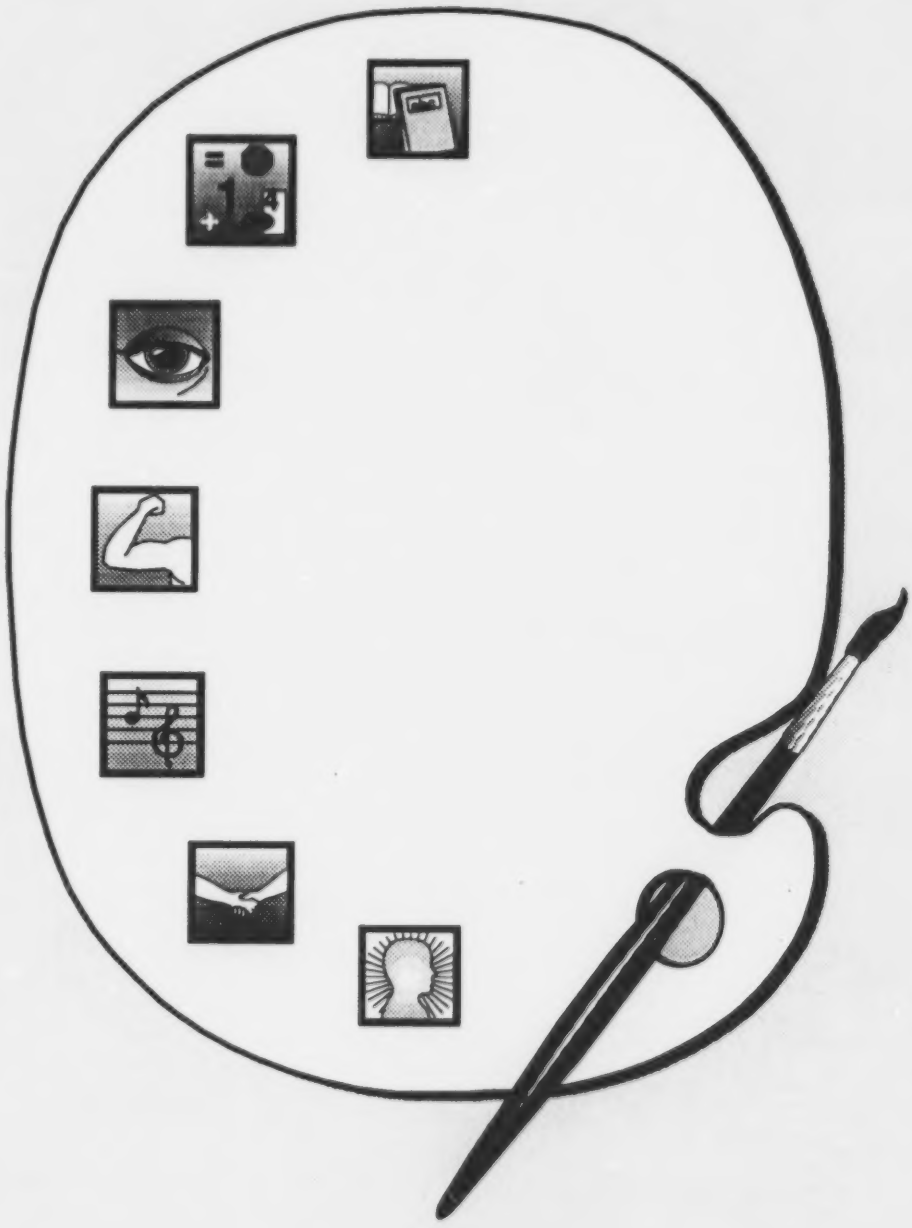
LESSON PROCESSING BLACKLINES

APPENDIX

A

Palette for Designing Multi-modal Eventfulness

Topic: _____



Models for Student Journals

NOTE: Journals can involve different modes of reflecting including writing, drawing, painting, sculpting, role-playing, dancing, etc.

"THINKING LOGS" (to process lesson content)

"The main thing I'll remember is . . . "
"A new insight or discovery is . . ."
"I really understood . . . I'm really confused about . . ."
"A learning I can use beyond school is . . ."
"Connections I'm making with other things I know are . . ."

"BEFORE AND AFTER SCENARIOS" (to process the impact of a lesson)

Analyze the impact of a unit/lesson on you using this chart.

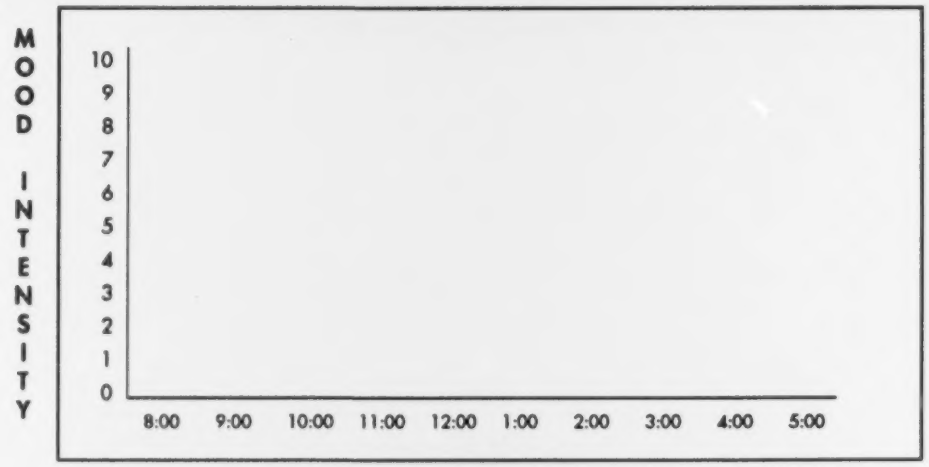
	BEFORE THE UNIT/LESSON	AFTER THE UNIT/LESSON
Feelings about it		
Thoughts about it		
Associations with it		
Images/pictures in mind		

Now write "How I'm different as a result of this unit/lesson."

Models for Student Journals

NOTE: Journals can involve different modes of reflecting including writing, drawing, painting, sculpting, role-playing, dancing, etc.

CHART YOUR MOODS (to process feelings about a period/day)



1. At the end of the day plot your different moods of the day on the graph above. (The vertical numbers represent mood intensity and the horizontal numbers time sequences.)
2. Place a mark at the high point of the day and one at the low point. Then look at the time before and after these points; think about other changes in mood. Make marks at the appropriate places.
3. Now connect the marks with a continuous curving line so that you have a visual picture of the mood changes and the "affective flow" of the day.
4. For each point that you have marked along the axes, jot a brief note about what was going on that catalyzed the mood shift.
5. Using colored markers or crayons, create a spectrum of colors from left to right to match the different moods you experienced.
6. Finally, think of the kind of music you would play as a background for each of the different moods of the day. Note these on the graph.
7. Try doing this every day for a week. At the end of the week lay all of your mood graphs side by side and reflect on the week. What do you learn about yourself as you look at the week in this way?

Models for Student Journals

NOTE: Journals can involve different modes of reflecting including writing, drawing, painting, sculpting, role-playing, dancing, etc.

"SNAPSHOTS OF THE PAST AND PRESENT" (to process the import of a lesson)

- Write the main idea of the lesson for you _____.
- Pretend this (idea) had never been discovered—How would life have been different in the past? (think of 3)

Snapshot #1 Snapshot #2 Snapshot #3

- How would life be different today without this idea? (think of 3)

Snapshot #1 Snapshot #2 Snapshot #3

Models for Student Journals

NOTE: Journals can involve different modes of reflecting including writing, drawing, painting, sculpting, role-playing, dancing, etc.

"STEPPING STONES INTO THE FUTURE" (to project future applications of a lesson)

- Write the main idea of the lesson for you _____.
- Brainstorm 5 ways this idea has been or is being applied in our times

1.

2.

3.

4.

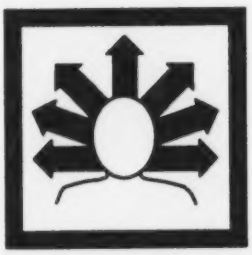
5.

- Pretend you can step into the next century. How will this idea be applied then?

Seven Ways of Teaching Weekly Checklist

Have I taught for the "seven ways of knowing" this week? Check yourself by listing the specific strategies, techniques, and tools you have used in classroom lessons this week.

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Verbal/ Linguistic					
Logical/ Mathematical					
Visual/ Spatial					
Body/ Kinesthetic					
Musical/ Rhythmic					
Interpersonal					
Intrapersonal					



LESSON PROCEDURE BLACKLINES

APPENDIX

B

The 6 Ss for Describing Attributes

Object: _____

Sight

Sound

Smell

Sense (tactile)

Size

Speciality

Write 3 sentences telling different things about the object you find interesting

1.

2.

3.

See/Feel T-Chart

Object _____

What I See	How I Feel

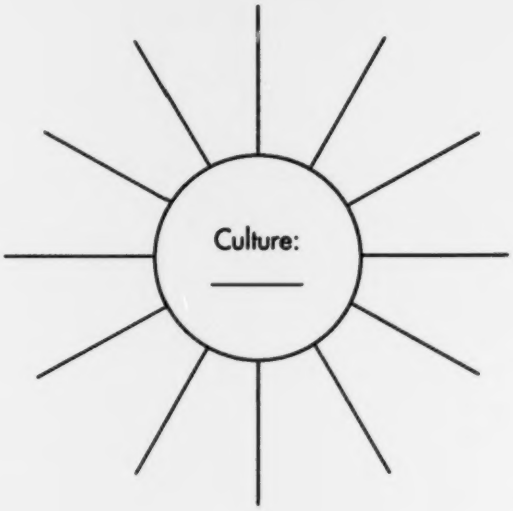
Write 2 sentences:

1. Things our team saw in the object are

2. My feelings about the object are

3 Graphic Organizers

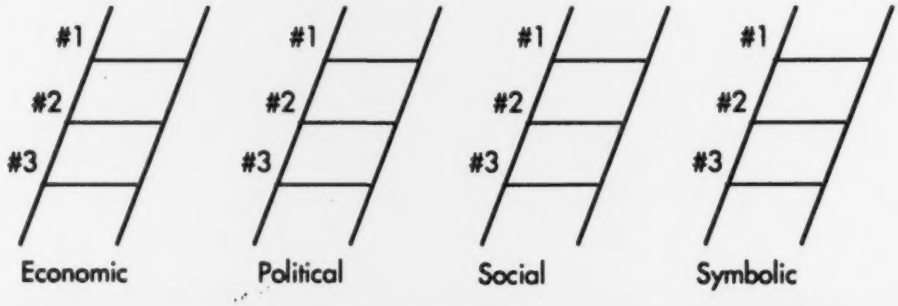
Attribute Web



Classification Chart

Economic Attributes	Political Attributes	Social Attributes	Symbolic Attributes

Ranking Ladders



Discussion Questions

"How to Make Food from Sunlight"

1. What do you remember from the reading?

2. What was surprising to you? Exciting? Amazing?

3. Recall and list the stages of photosynthesis. What happens first, second, third, etc?

4. If you could have a conversation with a plant, what questions would you ask?

Fold into a tent card

In 1776 America signed the Declaration of Independence. In the Declaration, America says that it is breaking away from England and will be a nation on its own. The Declaration lists the reasons the Americans decided to become their own nation.

Thomas Jefferson wrote the Declaration of Independence. John Hancock was the first person to sign it. Then 57 others also signed it to show their support for the move to become free from England.

Questions:

1. What is the Declaration of Independence about?
2. Who was its author?
3. How many people signed it?
4. Why did they sign it?

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Team Reflection Log

	#1	#2	#3	#4
Story				
Feelings				
?s				
Today				

How to Make Food from Sunlight

The Amazing Process of Photosynthesis

The wonders of photosynthesis have intrigued scientists ever since the phenomenon was first recognized. The overall process—the conversion of water and carbon dioxide into sugar—has been known for more than a century. While there are still many gaps in our understanding of photosynthesis, our information is growing.

Three "outside" ingredients are involved to get the whole process started: 1) water, which is drawn up into the plant through its roots and stems, 2) carbon dioxide, which enters the plant through pores on its many leaves, and 3) sunlight, which is the energy source that catalyzes the whole process.

The heart of the process lies in the chloroplasts, with their light-reacting pigment. The cells of the leaf are dotted with green chloroplasts. They are shaped like tiny footballs and can turn, within the cell, to take best advantage of the light, almost like a light-sensitive radar system. The chloroplasts are stacked on top of one another and are layered with chlorophyll molecules. The chlorophyll starts soaking up or absorbing the sunlight once the chloroplasts have located it. This absorption of light-energy from the sun activates or "turns on" the chlorophyll. The chlorophyll splits the water molecule, producing hydrogen and oxygen. The oxygen is released into the air through the pores of the leaves. The hydrogen is instantly seized by a special "escort" molecule and will play an important role in the next step of the process.

Meanwhile, the chlorophyll molecule starts to "deactivate" and return to its normal state. As this happens, further energy is released which is used to create an energy-driver molecule called ATP (adenosine triphosphate) from certain materials already present in the plant. ATP is a power or energy unit that is present in all living organisms. It has the ability to supply energy to chemical reactions without itself becoming a part of the end product. This concludes the "photo" or the light-requiring part of the photosynthesis process. The work of the chlorophyll is finished and the "synthesis" part begins. The carbon dioxide now lines up with an "acceptor" module that is already in the plant. This sets the stage for a critical union to occur. The hydrogen atom, led by its "escort" module and powered by ATP, combines with the carbon dioxide to form a highly reactive compound called PGA (phosphoglyceric acid). The PGA molecules then combine to form sugar, which in turn is stored in the plant for food.

The "machinery" for this process is very complex and the whole process happens almost instantaneously; but with the electron microscope, much of it can actually be seen.

Key Ingredients for Success in Cooperative Learning

1. You must consciously **bring higher-order thinking** and reasoning to a lesson. Students must be taught how to think at higher levels and have lessons that challenge them to perform at these higher levels.

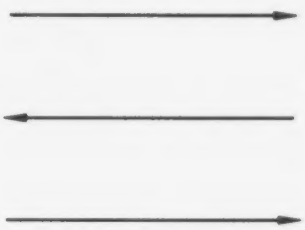
2. You must have a kitbag of strategies to **unify the teams**. You want to create a sense of "We need each other for this lesson" or what Roger and David Johnson call "positive interdependence."

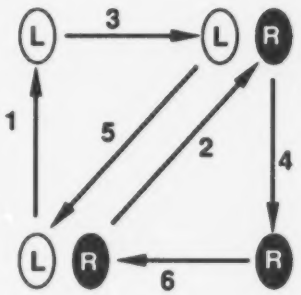
3. You must structure the lesson to **insure individual learning**. There should be no "sloughing off" on the part of the individual just because he/she is in a group.

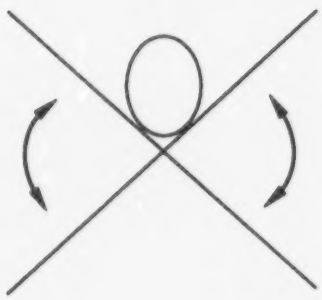
4. You must provide students enough time to **look over and discuss** both the lesson content and their cooperative behavior. As students process their lessons they become more and more aware that they are the key to their own educational success.

5. You must carefully and explicitly **develop the necessary social skills**—the necessary skills of effective cooperation and collaboration with others. These skills include such things as listening, encouraging, taking turns, staying on task, using appropriate voice volume, etc.

Physical Movement Formulas

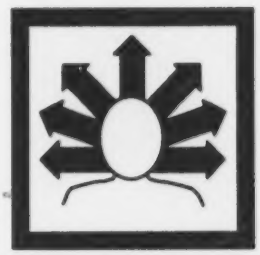






4-Level Reflection Model

LEVEL 1 **HOW AM I INVOLVED?**	Where and how does the issue touch my life? How does it make me feel? What are my thoughts and opinions about it?
LEVEL 2 **WHAT ARE THE PLUSES, MINUSES, AND WHAT DO I FIND INTERESTING?**	<table><tr><th>Positive Aspects +</th><th>Negative Aspects −</th><th>Interesting !</th></tr><tr><td></td><td></td><td></td></tr></table>
LEVEL 3 **WHAT DO I THINK COULD/ SHOULD BE DONE?**	If I was "in charge" what would I do? What do I think needs to happen in this situation? What action(s) should be taken?
LEVEL 4 **WHAT CAN I DO NOW?**	What steps could I take now (even small ones) to bring about a resolution to this issue?

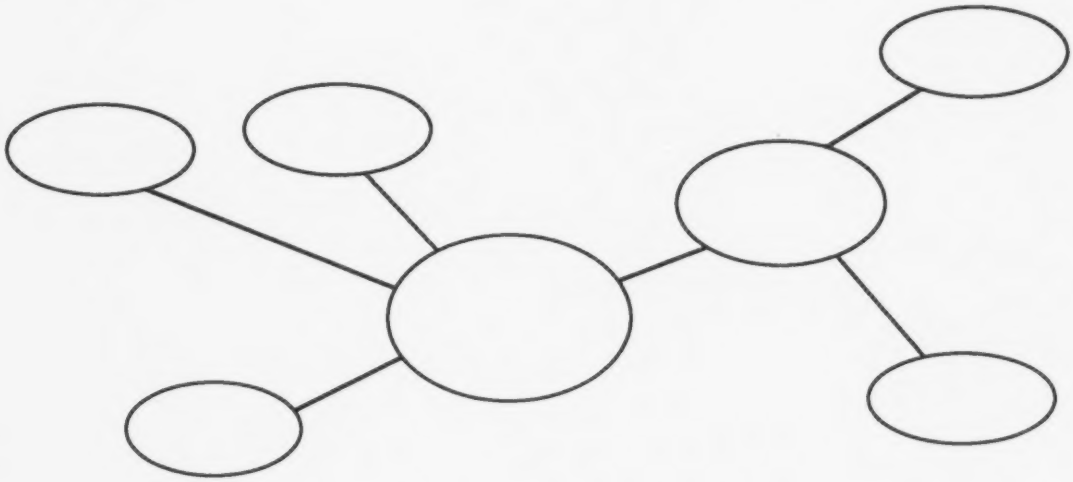


GRAPHIC ORGANIZER BLACKLINES

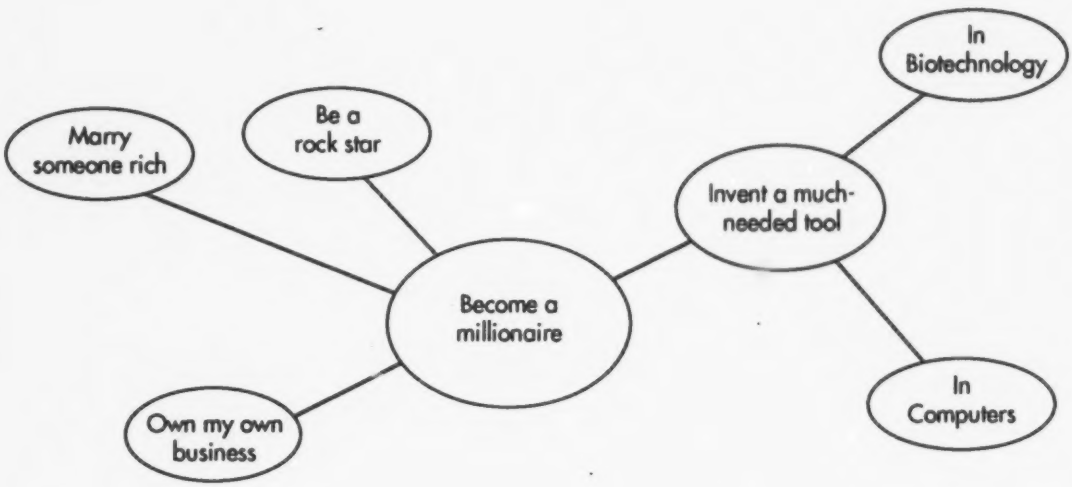
APPENDIX

C

CONCEPT MAP



CONCEPT MAP (example)



STORY GRID

STORY GRID (example)

GOOD GUY	SIDEKICK	BAD GUY	GAL	CONFLICT	SETTING	ENDING
doctor	small boy	city slicker	lawyer	man vs. nature	1800s	cliff hanger
lawyer	farmer	land baron	gambler	ranchers vs. farmers	closet	everyone happy
Indian chief	deputy	bully	school teacher	town vs. stranger	Montana	serial
marshall	relative	ex-con	widow	large bank deposit lost	town	tragic
stranger	friend	gambler	little kid	man vs. self	desert	butler did it
bartender	a dog	politician	eastern cousin	good vs. evil	saloon	bad guy wins
shop owner	rancher	lawyer	bank clerk	cowboys vs. Indians	mountain	everyone dies

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4 X 4 X 4

I		II		III		IV	
A	1	A	1	A	1	A	1
	2		2		2		2
	3		3		3		3
	4		4		4		4
B	1	B	1	B	1	B	1
	2		2		2		2
	3		3		3		3
	4		4		4		4
C	1	C	1	C	1	C	1
	2		2		2		2
	3		3		3		3
	4		4		4		4
D	1	D	1	D	1	D	1
	2		2		2		2
	3		3		3		3
	4		4		4		4

4 X 4 X 4 (example)

On What Do I Spend My Time?							
I Home		II Work		III Family		IV Self	
A The house	1 painting	A lesson planning	1 outline	A spouse	1 alone time	A reading	1 Harper's
	2 cleaning		2 research		2 help w/bills		2 Moby Dick
	3 repairs		3 supplies		3 help w/kids		3 Newspaper
	4 bills		4 special activities		4 drive to activities		4 Trade Journals
B The garden	1 mowing	B grading	1 reading papers	B kids	1 drive to activities	B exercise	1 walking
	2 weeding		2 marking papers		2 cook for		2 swimming
	3 watering		3 tabulating grades		3 buy clothes		3 biking
	4 raking		4 recording grades		4 help w/homework		4 bowling
C The pets	1 feeding	C teaching	1 attendance	C parents	1 talk on phone	C relaxation	1 watching TV
	2 brushing		2 focussing		2 bring groceries		2 going to movies
	3 cleaning up		3 assignment		3 take kids to visit		3 sleeping
	4 taking to vet		4 monitoring		4 bring dinner		4 listening to music
D The car	1 repairs	D faculty meetings	1 preparing for	D church	1 attend Sunday	D seeing friends	1 dinner w/Sue
	2 washing		2 sitting in		2 choir		2 movie w/Gail
	3 filling w/gas		3 taking notes		3 volunteer work		3 party at Bob's
	4 tuning up		4 discussing		4 usher		4 bridge club

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FAT & SKINNY QUESTIONS

FAT	SKINNY
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

FAT & SKINNY QUESTIONS (example)

FAT (requires discussion)	SKINNY (can be answered with one word)
1. Why did the colonists break away from England?	1. Who drafted the Declaration of Independence?
2. What would things be like if America was still a British colony?	2. Was George Washington involved in drafting the Declaration of Independence?
3.	3.
4.	4.
5.	5.

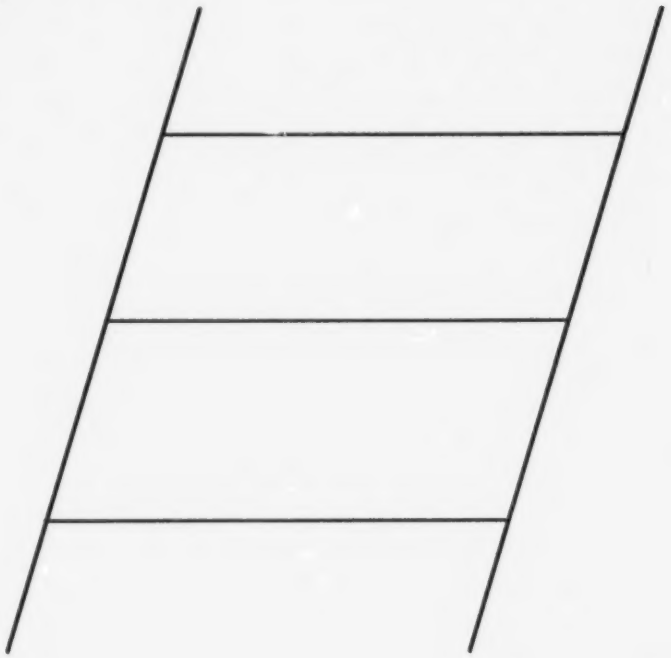
KWL CHART

What We Know	What We Want to Find Out	What We Learned

KWL CHART (example)

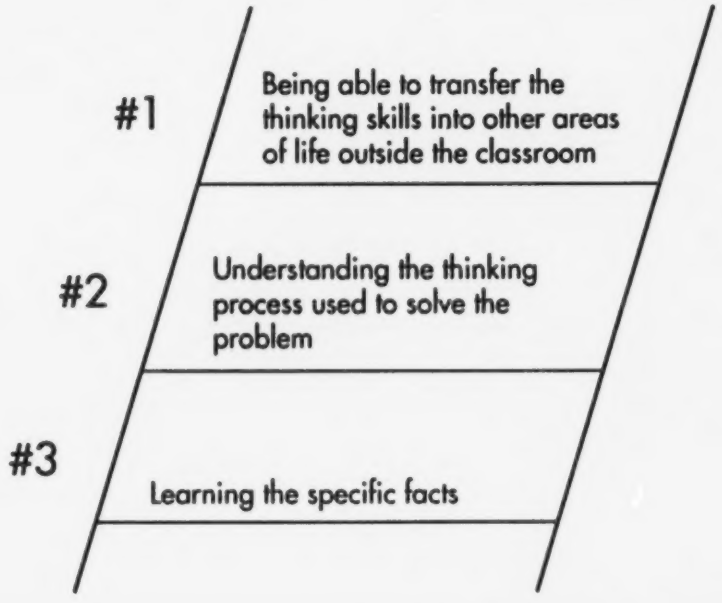
What We Know	What We Want to Find Out	What We Learned
There are different parts of speech.	How to correctly use each part of speech in sentences.	Parts of speech are like a paint palette from which you can create interesting sentences.

RANKING LADDER

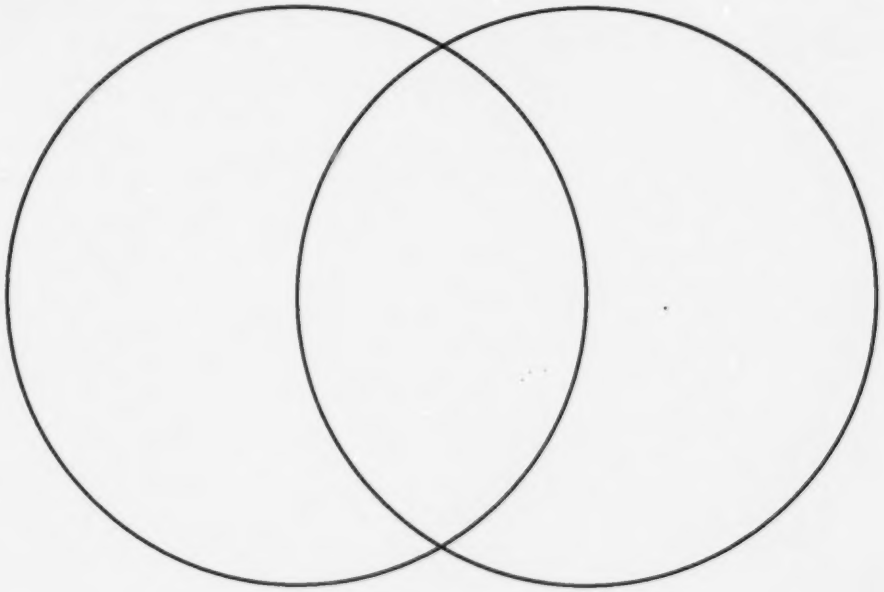


RANKING LADDER (example)

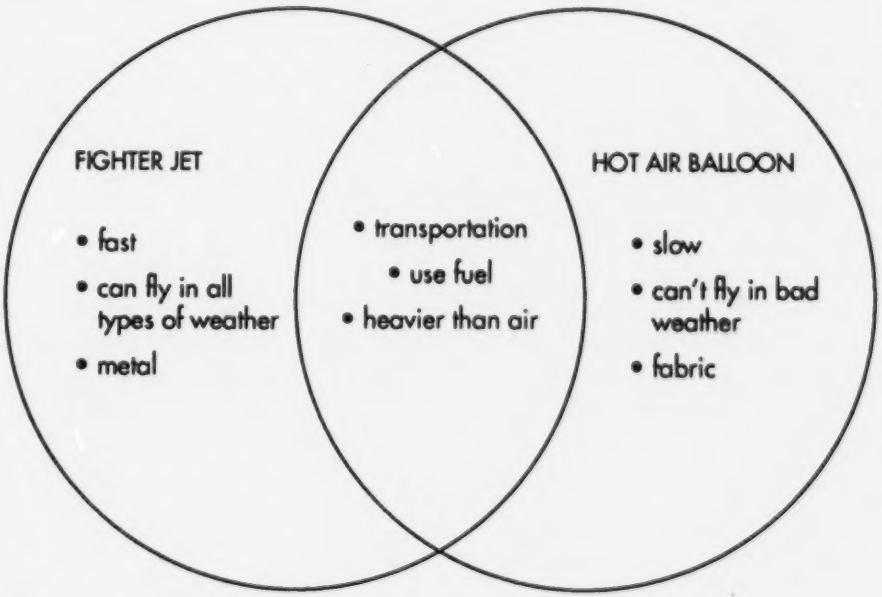
THE IMPORTANCE OF THE DIFFERENT ASPECTS OF LEARNING


#1
Being able to transfer the thinking skills into other areas of life outside the classroom
#2
Understanding the thinking process used to solve the problem
#3
Learning the specific facts

VENN DIAGRAM



VENN DIAGRAM (example)



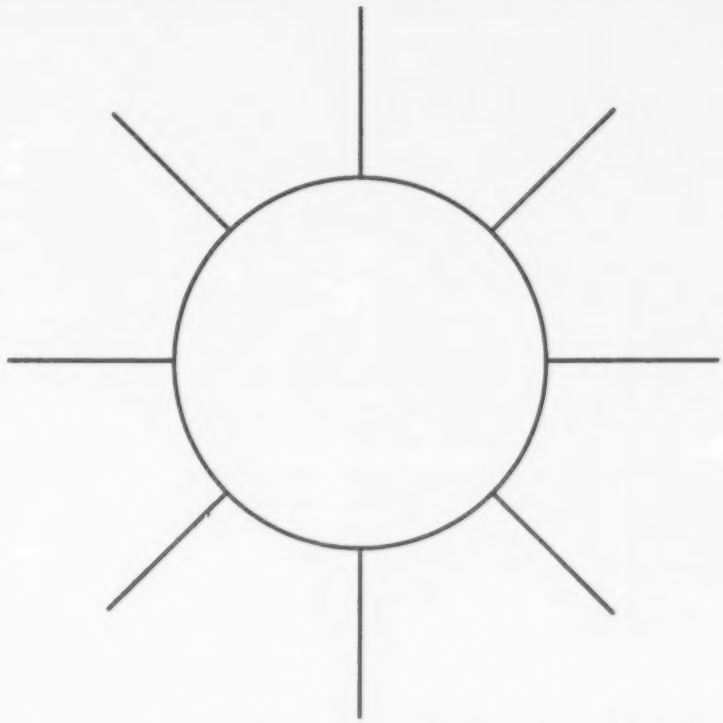
MATRIX

TOP CATEGORY / SIDE CATEGORY			

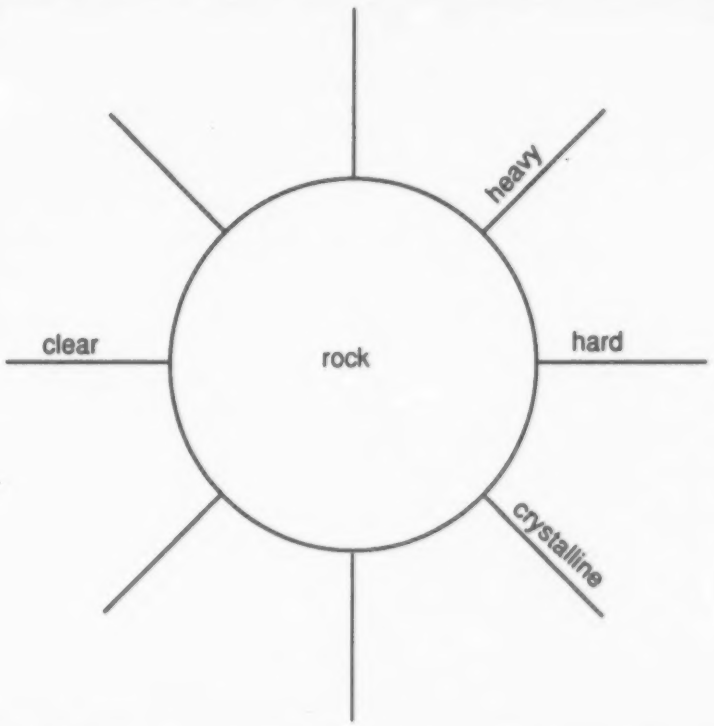
MATRIX (example)

GLOBAL ISSUE / COUNTRY	ENVIRONMENTAL CONCERN	HUMAN RIGHTS	CULTURAL DIVERSITY
MEXICO	Air Polution	Homelessness	Indians
INDIA	Food Supply	Overcrowded Conditions	Religion
CANADA	Deforestation	Socialized Medicine	French/English

WEB

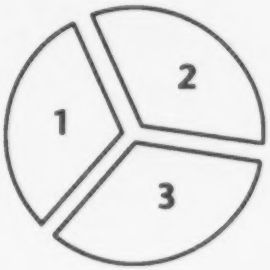


WEB (example)



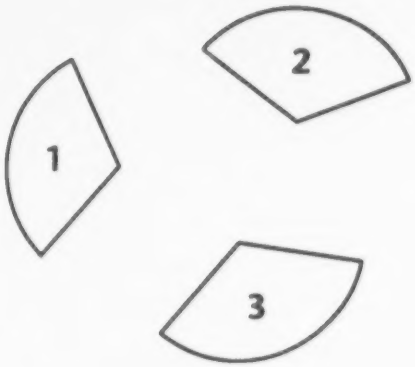
JIGSAW

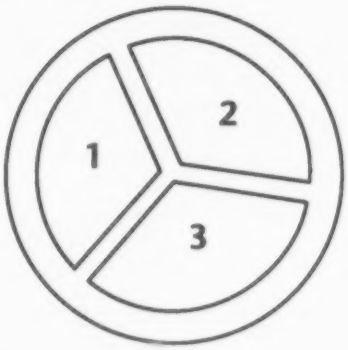
JIGSAW



Original Group
(Members divide work.)

Individual Work
(Members decide ***what's*** important and ***how*** to teach their fellow group members.)





Original Group
(Members teach each other.)

TWO DECISIONS

#1 What to teach . . .

#2 How to teach it . . .

PMI CHART

P+	M-	I?

PMI CHART (example) **Daughter's College Education**

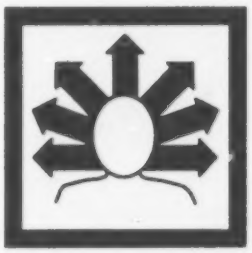
P+	M-	I?
1. Sets her up for higher salaries 2. It brings about a maturing and sense of responsibility 3. Tight finances will force her to have a job to help pay	1. She's not diligent with her high school studies and college is much more demanding 2. Tight finances will force her to have a job to help pay	1. If she took a year off between high school and college, she might be more ready for college 2. She is very interested in drama and other cultures

WHAT? SO WHAT? NOW WHAT?

What? (What have I learned?)
So What? (What difference does it make?)
Now What? (What can I do with this information?)

WHAT? SO WHAT? NOW WHAT? (example)

What? (What have I learned?) Oak is harder than pine.
So What? (What difference does it make?) Oak will burn slower than the pine will.
Now What? (What can I do with this information?) If I want my campfire to last longer, I will use oak instead of pine.



GLOSSARY

Glossary

amplify to expand, strengthen, and enhance one's intelligence capacities.

attribute webbing a thinking strategy that involves brainstorming attributes/characteristics of something using the "web" graphic organizer (see blackline, p. 142).

awaken to "trigger," catalyze, or assess latent intelligence capacities in the brain using specifically targeted exercises.

awareness technique any method or tool that gives one a new perspective, expands one's thinking horizons, or alters one's self-understanding.

biofeedback a technique for learning to control certain "involuntary" functions such as blood pressure, body temperature, heart rate, etc.

blackline a master copy from which photocopy reproductions can be made.

brainstorm to generate as many ideas as possible on a topic without evaluating or judging those ideas.

Broca's area the area of the brain, located in the front part of the left hemisphere, that is primarily responsible for the production and understanding of language.

classification matrix a graphic organizer that can help one learn the thinking skill of classifying things according to various criteria (see blackline, p. 141).

cognitive organizer a visual diagram of a thinking pattern/process.

concept mapping a thinking technique that begins with a central idea and proceeds to show related ideas as branches off of the center (see blackline, p. 134).

counter-melody a second melody in a song that is different from the main melody and yet fits perfectly with it when they are played simultaneously.

deep relaxation technique any method that assists one in achieving a more relaxed state of being.

dramatic structure model the classical structure of a Shakespeare play—action builds to a decisive climax followed by the results/implications of the climax.

"Each One Teach One" an interactive group strategy in which each person in a group learns something and then teaches it to the others in the group.

fat and skinny questions a technique for helping students stimulate further thinking—"skinny" questions can be answered with a "yes" or "no." "Fat" questions require thoughtful creative responses (see blackline, p. 137).

focusing technique any method or tool that helps one bring attention/thinking to a singular point.

4 x 4 x 4 outline a graphic organizer that can help one learn how to organize thinking through main points, sub-points and sub-sub-points (see blackline, p. 136).

"Gossip" a game in which something is whispered to the first person in a line of people and then is passed down the line in turn to each person, the point being to note how the "final message" has changed in the process.

graphic organizer see "cognitive organizer."

guided imagery a thinking process that activates one's imagination and capacity to pretend.

"HOW I say WHAT I say" a verbal exercise in which the intended meaning of something is altered simply by the inflection, tone, and pitch of one's voice when speaking.

human graph a thinking strategy that asks people to physically stand along a spectrum that indicates how they feel/think about an issue.

human sculpture tableau the physical arrangement of a group of people such that postures and positions "em-body" a certain idea or feeling.

"I Become What I Behold" an empathy exercise that involves imagining that one can become another person, animal, or thing and, from that perspective, look back and observe the self.

inner seeing exercises see "guided imagery."

jigsaw a cooperative learning strategy that involves giving each person in a group a portion of the whole to learn and then teach it to the others in the group (see blackline, p. 143).

KWL goal-setting a graphic organizer that helps one assess prior knowledge and current questions for a learning task, and then to assess what was actually learned after the task is completed (see blackline, p. 138).

"Live Painting" see "human sculpture tableau."

matrix a way of classifying things on a chart with certain categories across the top and others down the side of the chart; items in the chart must meet the criteria of both the top and side category (see blackline, p. 141).

metacognition the process of thinking about and analyzing one's own thinking processes/patterns.

metacognitive processing the evaluation of one's own thinking after the completion of a learning activity.

mind map same as "concept map" except it primarily uses pictures, images, colors, designs, and patterns to express concepts of ideas.

multi-tracking any physical exercise that involves performing several different actions simultaneously (e.g. rubbing the stomach and patting the top of the head while jogging in place).

"New Word For The Day" a vocabulary expansion practice that involves learning the meaning of a new word each day and using it in conversation during the day.

non-competitive game a game in which the point is to have fun playing, not to beat the opponent.

pass over see "I Become What I Behold."

peer coaching team a cooperative group in which the members have agreed to help each other improve certain skills by giving each other positive feedback and advice.

PMI a graphic organizer that helps one learn the thinking skill of evaluation (P= pluses, M=minuses, I=interesting) (see blackline, p. 144).

ranking ladder a graphic organizer that helps one learn the thinking skill of prioritizing (see blackline, p. 139).

"Rhythm Game" a game that involves recalling certain numbers and number patterns to rhythmic hand-clapping and finger-snapping.

spiral adaptation the process of altering a particular lesson so it is appropriate for different grade levels or age groups.

"Stop the Action and Improvise" a drama technique in which actors play a scene and the director stops the action at a random point and asks the actors to improvise the rest of the scene.

story grid a graphic organizer that contains basic information for a story (e.g. hero, heroine, villain, setting, conflict, ending) that is randomly chosen and woven together to create a final story (see blackline, p. 135).

transfer the process of making connections between one's learning and daily life.

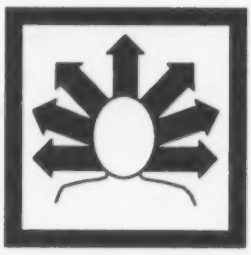
"Turn to Your Partner and..." an interactive strategy in which two people who are seated next to each other discuss and/or process information, share feelings and thoughts, and explore ideas.

ugly Americanism rude and insensitive behavior of American tourists visiting other cultures.

Venn diagram a graphic organizer in which two or more overlapping circles help teach the thinking skill of comparing and contrasting (see blackline, p. 140).

web a graphic organizer that helps one learn the thinking skill of brainstorming (see blackline, p.142).

"What? So What? Now What? a processing technique used after one has acquired some new information—*what* was learned, *so what* matter/difference does it make, and *now what* will one do with the new knowledge (see blackline, p. 145).



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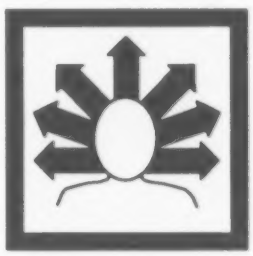

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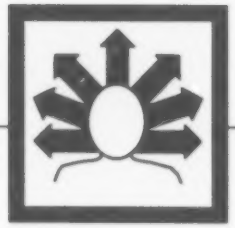

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